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Calfhood Vaccination against Bang's Disease, using an Aerobic Strain of Brucella abortus of Moderate Virulence

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Since Buck (1930) and Cotton, Buck & Smith (1933) first reported their observations on the immunizing values of different strains of *Br. abortus* and drew attention to the possibilities of calfhood vaccination, much thought has been devoted to one strain in particular, S19, which has been shown to be of low virulence for cattle but yet possesses considerable immunizing powers. The limitations of this vaccine under field conditions have not yet been accurately determined and such questions as the proper age at which to inoculate, the duration of immunity, the number of doses of vaccine required, and the intervals at which they ought to be injected have yet to be answered.

The present communication deals with the immunizing value of a smooth aerobic strain of *Br. abortus* (McEwen 161). The strain was judged to be of moderate virulence by guinea-pig inoculation, mouse toxicity tests and intradermal inoculation of rabbits, according to the methods of McEwen (1940), Priestley & McEwen (1938), and Priestley (1939). The strain used for the subsequent resistance tests during pregnancy was McEwen 544, the virulence of which has been described by McEwen, Priestley & Paterson (1939).

The experiment was carried out in three parts. The first concerns attempts to recover strain 161 from the organs and tissues of calves inoculated subcutaneously, while the second and third parts deal with the immunizing value of the strain as a calfhood vaccine. Two groups of calves were used for these latter studies and, when pregnant, they were exposed to a test infection of virulent organisms approximately 18 and 30 months respectively after vaccination.

THE RECOVERY OF THE VACCINE STRAIN FROM RECENTLY VACCINATED CALVES

Two calves (Nos. 1 and 2), aged between four and five months, whose sera were free from agglutinins against *Br. abortus*, were inoculated subcutaneously in front of the shoulder with approximately 40×10^9 viable organisms of strain 161 suspended in 5 ml. normal saline containing 1 per cent. broth. Within an hour or two their temperatures rose to 105° to 106° F. and next morning they were dull, refused food and were scouring slightly. On the second day the calves looked much better and were eating again. They appeared normal on the third day and their temperatures, though still above normal, were falling steadily. Seven days after vaccination the calves were normal. Nine further calves (Nos. 3 to 11), whose blood was also free from brucella agglutinins, were similarly inoculated, with the same train of symptoms.

Eight calves (Nos. 1 to 8) were slaughtered at intervals ranging from 58 to 182 days after vaccination and attempts were made to recover *Br. abortus* from the regional lymph glands (prescapular), and from the lymph glands of the head, thorax and abdomen, the spleen and a pool of the remainder of the carcase glands, both by culture in air and in CO_2 and by biological tests in guinea-pigs.

With one exception the results were uniformly negative. The exception was a calf killed 99 days after vaccination. Direct cultures were negative from all sites but fully virulent CO_2-sensitive strains were recovered from the guinea-pigs inoculated with suspensions prepared from the thoracic glands and from the head glands. The three calves (Nos. 9, 10 and 11) not killed were carried over into parts II and III of the experiment.

It would appear that in the main young calves rapidly free themselves of strain 161 when inoculated subcutaneously. The recovery of a fully virulent CO_2-sensitive strain of *Br. abortus* would appear to indicate that the aerobic character of strain 161 is not firmly fixed. This was further confirmed by the recovery of CO_2-sensitive strains from guinea-pigs inoculated intramuscularly with a suspension of strain 161. Thus, out of ten guinea-pigs inoculated intramuscularly with approximately 4,500 organisms, CO_2-sensitive strains were recovered from spleens of three of them when they were slaughtered six weeks later.

THE EFFECT OF CALFHOOD VACCINATION ON EXPOSURE TO VIRULENT INFECTION APPROXIMATELY 18 MONTHS AFTER VACCINATION

The 23 heifers included in this part of the experiment were divided into two groups, *viz.*, 14 vaccinated and nine controls.

The vaccinated animals comprised twelve brucella agglutinin-negative heifer calves (five to seven months old) received from the Agricultural Research Council's Field Station, together with two other heifer calves, both negative for brucella agglutinins. The former were inoculated subcutaneously with approximately 40×10^9 viable organisms of strain 161 on November 1st, 1940, and the latter on April 22nd, 1940. All were dull and had a depressed appetite for approximately 48 hours after vaccination. No other ill-effects, except elevated temperatures, were noted. The blood agglutination titre of all the vaccinated animals was determined from time to time, before and after vaccination, using the Weybridge (standardized) *Br. abortus* antigen. Immediately following vaccination the agglutinin titre of the blood rose within 21 days to between 1:160 and 1:640. There was a steady decline over the following six to seven months; at the time of infection most of the animals were free from agglutinins. During the period October 31st to December 31st, 1941, the heifers were mated.

The nine control heifers, having been mated during the same period, were transferred to the laboratory from the Agricultural Research Council's Field Station in March, 1942—all being free from brucella agglutinins at the time of movement.

The two groups were housed in buildings approximately 500 yards apart, each unit having a separate attendant.

Having ascertained by rectal palpation that all were pregnant, the vaccinated and control heifers were infected on April 2nd, 1942, by dropping 0·1 ml. of a hundredfold dilution of a Brown 10 suspension of virulent *Br. abortus* organisms (McEwen 544) on to the conjunctiva of the eye. A viable count of the suspension showed that each heifer received approximately $16{\cdot}75 \times 10^6$ living organisms.

The virulence of the infecting dose was titrated on guinea-pigs. A portion of the original Brown 10 suspension was diluted to correspond to Brown's tube 3, and groups, each of ten guinea-pigs, were inoculated intramuscularly with 1 ml. of 10^{-6}, 10^{-7}, 10^{-8}, and 10^{-9} dilutions of the latter suspension. Forty-one days later they were killed and examined for the presence or absence of *Br. abortus* infection. The infection rate for each dose is set out in Table I. The results indicate that the virulence of strain 544 has not appreciably changed since it was tested when first isolated (McEwen, 1940).

TABLE I

INFECTION RATE IN VIRULENCE TEST OF MCEWEN 544 ON GUINEA-PIGS

Dilution of Tube 3 (Brown's scale)	Approximate number of organisms	Infection rate*
10^{-6}	4,800	10/10
10^{-7}	480	10/10
10^{-8}	48	8/10
10^{-9}	5	4/10

* The denominator indicates the number of animals exposed to infection and the enumerator the number infected.

The blood agglutinin titre of each heifer was determined every 21 days after infection until they were removed from the experiment.

TECHNIQUES EMPLOYED FOR THE ISOLATION AND IDENTIFICATION OF *Br. abortus*

These were essentially the same as those described by Edwards, de Ropp & McLeod (1945) and need not be repeated here. Samples were taken in duplicate at the time of abortion or calving, one set being sent for examination to the Ministry of Agriculture's Veterinary Laboratory at Weybridge.* The media used at Cambridge were horse serum-agar and blood-agar containing 1:500,000 crystal violet. Cultures were incubated for six to eight days under increased CO_2 tension. Colonies suspected of being *Br. abortus*

* The results of the examination carried out at Weybridge tallied in all respects with those obtained at Cambridge.

were examined morphologically and subsequently subjected to confirmatory tests—CO_2-sensitivity and agglutinability with known positive and negative sera.

In addition to direct culture, pairs of guinea-pigs were inoculated with foetal material or milk in all instances in which it was considered unlikely that *Br. abortus* would be recovered by culture or alternatively where direct culture had failed. One guinea-pig of each pair was killed 28 days after inoculation and the other at 42 days. Cultures from the spleen were incubated and the blood serum was examined for brucella agglutinins.

In those cases where *Br. abortus* was not isolated at the time of parturition, milk samples were taken approximately three and six weeks later and subjected to cultural and biological examination for the presence of *Br. abortus*.

Results

Vaccinated heifers.—Of the 14 vaccinated heifers, twelve gave birth normally to healthy full-term calves. Not one of these heifers showed any evidence of brucella infection at the time of calving nor was *Br. abortus* recovered subsequently from their milk. Of these twelve, three (Nos. 27, 28 and 35) developed agglutinin titres after exposure to the test dose of strain 544, which would be considered positive (complete agglutination at a dilution of 1:20 with partial agglutination at 1:40). These titres, however, receded before the animals calved.

One heifer (No. 10) was manually delivered of a weakly full-term calf which died some ten minutes after birth. Virulent CO_2-sensitive cultures of *Br. abortus* were recovered from both the calf and its mother. This heifer developed a positive titre after calving, having been negative beforehand.

One heifer (No. 39) aborted a dead calf 68 days after infection. A virulent CO_2-sensitive culture of *Br. abortus* was recovered from the foetus and its dam. This heifer developed a high blood agglutinin titre before it aborted.

The details of this group, together with some of the agglutination test results, are set out in tabular form in Table II.

Control heifers.—One of the animals (No. IV) died as a result of actinomycosis on 8.6.42, *i.e.*, approximately two months after the test inoculation. No evidence of brucella infection was determined either by culture or biological examination.

Six of the eight remaining heifers aborted dead foetuses which were all proved to be infected with *Br. abortus*. One heifer (No. VIII) had a premature calf which lived, whilst the eighth heifer (No. VII) calved normally at the expected time. In each of the latter cases *Br. abortus* was recovered from either the foetal membranes or a vaginal swab and from the colostrum. All animals developed a high titre of agglutinins for *Br. abortus*. The results are set out in Table III.

TABLE I
SUMMARY OF RESULTS. FIRST

Heifer number	Agglutination titres after vaccination				Agglutination titres after infection 2.4.42					Date of service	Nature and date of calving	Duration of pregnancy (days)
	18.11.40	26.12.40	11.3.41	16.3.42	24.4.42	8.6.42	5.8.42	16.9.42	28.10.42			
35	640	640	40	0	Tr. 10	Tr. 10	10+	Tr. 10		10.10.41	Normal 22.7.42	285
39	320+	640	40	0	0	320				16.10.41	Aborted 9.6.42	236
10†		0	0	0	0	Tr. 10	80	>160		20.10.41	Dystokia• 23.7.42	276
28	320+	320+	40	10+	20+	20+	20	Tr. 10		20.10.41	Normal 2.8.42	286
21	640+	640	40	10	Tr. 10	Tr. 10	Tr. 10	0		20.10.41	Normal 29.7.42	282
11†		0	0	0	0	0	Tr. 10	0		24.10.41	Normal 5.8.42	285
26	320+	320	80	Tr. 10	Tr. 10	10+	10+	Tr. 10		6.11.41	Dystokia 13.8.42	280
32	320+	640	20+	0	0	0	0	0	0	25.11.41	Normal 11.9.42	289
30	320+	320	40	0	Tr. 10	Tr. 10	Tr. 10	10		28.11.41	Normal 30.8.42	305
34	320+	640	80	0	0	0	0	0	0	8.12.41	Normal 8.10.42	320
27	640	320+	80	Tr. 10	Tr. 10	10+	10+	Tr. 10		13.12.41	Normal 19.9.42	280
38	320+	160+	20	0	0	0	Tr. 10	0	0	13.12.41	Normal 24.9.42	285
23	320+	160+	0	0	0	0	0	Tr. 10	Tr. 10	23.12.41	Normal 8.10.42	289
25	320+	640	80	0	0	Tr. 10	Tr. 10	0	Tr. 10	31.12.41	Normal 8.10.42	281

Note.—The heifers have been set down in the order of service dates. • = Calf died 10 mins. after birth.

TABLE II
SUMMARY OF RESULTS. FIRST

Heifer number	Agglutination titres after infection on 2.4.42							Date of service	Nature and date of calving	Duration of pregnancy (days)
	24.4.42	14.5.42	8.6.42	24.6.42	12.7.42	5.8.42	19.8.42			
V	20	40	320+	1,280	1,280			19.10.41	Aborted 10.7.42	234
VII	0	0	80	80	1,280	160	320	9.11.41	Normal 13.8.42	277
II	40	80	160	320	160			21.11.41	Aborted 31.5.42	191
VIII	0	80	320	640	1,280	1,280		21.11.41	Premature 6.8.42	258
I	20	80	10+	40	160			26.11.41	Aborted 28.6.42	214
XVII	40	160	640+	640+	640			6.12.41	Aborted 6.6.42	182
VI	0	40	80	1,280	1,280			22.12.41	Aborted 20.7.42	210
XXVII	0	Tr. 10	40	160	320+	1,280	1,280	26.12.41	Aborted 13.8.42	230

Agglutination Tests: Tr. = Trace of agglutination. + = Slight agglutination in the next tube.

The results of this part of the experiment indicate that a high degree of immunity is conferred by calfhood vaccination with a moderately virulent aerobic strain of *Br. abortus* (McEwen 161) against infection with a virulent strain approximately 18 months later during pregnancy. However, one disturbing feature was noted but its true meaning has not yet been assessed. One quarter of the udder in each of three vaccinated heifers was completely blind (Nos. 25, 34 and 28), whilst in two further heifers (Nos. 21 and 32) surgical interference was necessary to clear a membranous obstruction at the top of one of their teat ducts before a free flow of milk could be obtained.

Enquiries have been made in the herd from which these heifers originated and since trouble of this nature is unknown it seems reasonable to suspect that the strain of brucella used for vaccination may possess the property of attacking the immature udder tissue and doing permanent damage.

The Effect of Calfhood Vaccination on Infection Approximately 32 Months after Vaccination

Eleven heifers, vaccinated on November 1st, 1940, and one vaccinated on April 22nd, 1940, comprised the vaccinated group. Six brucella negative heifers served as controls. The latter animals were kept at the Ministry of Agriculture's Laboratory at Weybridge.

The vaccinated and control animals were mated during the period 17.12.42 to 2.4.43.

On 1.6.43 all the heifers were infected by the conjunctival instillation of 0·1 c.c. of a hundredfold dilution of a Brown 10 suspension of virulent *Br. abortus* (McEwen 544) prepared at Weybridge. The suspension for infection was prepared in the morning and both groups of cattle were infected at a pre-arranged time in the afternoon. As in the previous part of the experiment a viable count of the infecting dose was made and 1 c.c. was found to contain 143×10^6 organisms. (The figure obtained at Weybridge was 141×10^6.) Thus each heifer received a dose of 14×10^6 organisms.

The virulence of the original Brown 10 suspension was titrated on guinea-pigs at both centres as outlined above. The results are set out in Table IV.

Table IV

Dilution of Tube 3 (Brown's scale)	Approximate number of bacteria	Infection Rate.*		Combined infection rate*
		Cambridge	Weybridge	
10^{-6}	4,650	5/5	5/5	10/10
10^{-7}	470	3/5	4/4	7/9
10^{-8}	47	3/5	3/4	6/9
10^{-9}	5	1/5	0/5	1/10

* The denominator is the number of guinea-pigs inoculated and the enumerator the number infected.

II

Group of Vaccinated Heifers

Agglutination titre of colostrum	Agglutination titre of blood at calving	Bacteriological examination of foetus, colostrum and milk samples											
		Foetal membranes		4th stomach		Other organs		Colostrum		1st milk sample		2nd milk sample	
		Culture	G.-pigs	Culture	G.-pigs	Culture	G.-pigs	Culture	G.-pigs	Culture	G.-pigs	Culture	G.-pigs
80	..	(Swab) —	—	..	..	..	..	—	—	—	—	—	—
1,280	320	(Swab) +	+	+	+	+	+	+	+	..	..	..	..
160	40	C (Swab)	+	+	..	+	..	—	+	..	..	..	..
40	20	—	—	..	..	..	..	—	—	—	—	—	—
20	10	—	—	..	..	..	..	—	—	—	—	—	—
80	Tr. 10	—	—	..	..	..	..	—	—	—	—	—	—
80	10+	(Swab) —	—	..	..	..	..	—	—	—	—	—	—
0	0	(Swab) —	—	..	..	..	..	—	—	—	—	—	—
0	0	—	—	..	..	..	..	—	—	—	—	—	—
0	0	(Allantoic) —	—	..	..	..	..	—	—	—	—	—	—
0	10	—	—	..	..	..	..	—	—	—	—	—	—
40	0	—	—	..	..	..	..	—	—	—	—	—	—
..	Tr. 10	(Swab) —	—	..	..	..	..	—	—	—	—	—	—
0	Tr. 10	—	—	..	..	..	..	—	—	—	—	—	—

† = Heifers No. 10 & 11 were vaccinated in May, 1940. Their titres rose to 1 : 160 three weeks later, falling to 1 : 40 after twelve weeks.

III

Group of Control Heifers

Agglutination titre of colostrum	Agglutination titre of blood at calving	Bacteriological examination of foetus, colostrum and milk samples											
		Foetal membranes		4th stomach		Other organs		Colostrum		1st milk sample		2nd milk sample	
		Culture	G.-pigs	Culture	G.-pigs	Culture	G.-pigs	Culture	G.-pigs	Culture	G.-pigs	Culture	G.-pigs
>20,000	>5,000	C	..	+	..	+	..	+	..	..	..	..	..
2,560	320	+	..	..	..	..	..	+	—	..	..	..	..
80	80	(Swab)	..	..	..	—	+	—	—	..	..	..	..
1,280	>640	+	..	..	..	..	..	+	..	..	..	..	..
640	40	C (Swab)	+	—	..	+	..	?	+	..	..	..	..
640	640	— (Swab)	+	—	—	—	..	—	+	..	..	..	..
2,560	640	C	..	+	..	+	..	—	..	..	..	..	..
2,560	1,280	+	..	+	..	+	..	+	..	..	..	..	..

ABLES

teriological Examinations: + = *Br. abortus* isolated. C = Plates contaminated. ? = Presence of *Br. abortus* suspected. .. = No examination made.

The examination of the heifer calves and foetuses at the time of parturition was conducted as before. One minor modification was that milk samples were examined where necessary two and four weeks after parturition and not after three and six weeks.

Results

Vaccinated Animals.—The agglutinin titres of the twelve heifers were substantially negative on the date of infection. Seven heifers (Nos. 9, 12, 16, 17, 18, 29 and 31) produced normal full-term live calves and not one of them showed any evidence of brucella infection at the time of calving nor was *Br. abortus* recovered subsequently from their milk. At no time did they have an agglutinin titre above 1:10.

Three heifers aborted (Nos. 15, 33 and 36). Each had a high agglutinin titre at the time of abortion and smooth CO_2-sensitive strains of *Br. abortus* were recovered from the foetal membranes and foetus in each case. One heifer (No. 14) produced a premature weakly calf which was killed immediately after birth. This heifer also had a high blood titre at the time of parturition and CO_2-sensitive cultures of *Br. abortus* were obtained from the foetus and its membranes.

The twelfth heifer (No. 19) calved at the expected time but only with assistance and the calf was dead when delivered. No evidence of brucella infection was found at the time of parturition but a smooth CO_2-sensitive strain was isolated from one of a pair of guinea-pigs inoculated with the milk sample taken 14 days after parturition. This heifer had no blood titre at the time of calving and she remained negative for the ten following weeks. The milk sample taken 28 days after calving was negative for *Br. abortus*. It would appear to be open to question whether or not this heifer was actually infected with *Br. abortus* since the cross-infection of the single guinea-pig from other infected stocks in the same animal house might possibly have occurred.

Some of the agglutination test results, the data regarding service and calving, together with a summary of the laboratory examinations are set out in Table V.

Control heifers (at Weybridge).—Five of the six pregnant heifers aborted and *Br. abortus* was recovered by direct culture from the foetal membranes. The details regarding these animals are set out in Table VI.

DISCUSSION

The resistance conferred by vaccination against subsequent virulent infection by a single dose of an aerobic strain of *Br. abortus* (McEwen 161) of moderate virulence, is of a high order. With the passage of time this resistance is reduced. It would seem reasonable to postulate, therefore, that a single dose of an avirulent strain (such as strain 19) would be unlikely to produce a lasting resistance, if one of moderate virulence (McEwen 161) failed to do so.

The damage to the udders which was noted during the course of the experiment would not appear to be coincidental, and on this count the use of strain McEwen 161 for calfhood vaccination cannot be contemplated without further investigation.

There would appear to be little doubt, however, that calfhood vaccination with a single dose of living *Br. abortus* of reduced virulence will have to be reinforced by further suitable inoculations during adult life in order to maintain a high degree of resistance to infection with virulent field strains of *Br. abortus*.

Summary

In the series of experiments recorded, a smooth aerobic strain

TABLE V
SUMMARY OF RESULTS. SECOND

Heifer No.	Titre after vaccination			Titre after infection on 1.6.43						Date of service	Nature and date of calving
	18.11.40	2.12.40	11.3.41	16.3.42	22.6.43	14.7.43	27.8.43	8.10.43	21.12.43		
9	*			0	Tr. 10	0	0	0		17.12.42	Normal 21.9.43
31	320	160	20	0	10	0	Tr. 10	0		18.12.42	Normal 28.9.43
16	320	640	20	0	0	0	0	0		21.12.42	Normal 24.9.43
33	320	160+	Tr. 20	Tr. 10	Tr. 10	0	80			31.12.42	Aborted 11.9.43
14	320	640	40	0	20+	10+	160			8.1.43	Premature† 25.8.43
29	320	320	20	0	0	0	Tr. 10	0		12.1.43	Normal 18.10.43
17	320	320	40	0	0	0	Tr. 10	Tr. 10		15.1.43	Normal 23.10.43
15	320	320	20+	0	80+	160	160+			21.1.43	Aborted 20.8.43
36	320	320	20	0	10	0	80			4.2.43	Aborted 29.8.43
12	320	320	20	0	Tr. 10	0	0	0	0	13.2.43	Normal 22.11.43
18	320	80+	20	0	Tr. 10	0	Tr. 10	Tr. 10	0	25.3.43	Normal 8.12.43
19	640	640	80	10	10	0	Tr. 10	Tr. 10	0	2.4.43	Dystokia‡ 12.1.44

* Heifer No. 9 was vaccinated in May, 1940. Its titre rose to 1 : 40 three weeks later, falling to 1 : 20 after 12 weeks.

TABLE VI
SUMMARY OF RESULTS. SECOND GROUP OF CONTROL HEIFERS

Heifer No.	Agglutination titres after infection on 1.6.43				Date of service	Nature and date of calving	Duration of pregnancy (days)	Agglutination titre of blood at calving	Bacteriological examination of membranes and milk				
									Membranes		Milk (culture and g.-pigs)		
	21.6.43	22.7.43	24.8.43	27.9.43					Culture	G.-pigs	Colostrum	2 weeks	4 weeks
504	20+				23.12.42	Aborted 1.7.43	190	20	+	..	+	+	+
508	10+	200			23.12.42	Aborted 30.7.43	219	400	+	+	+	—	+
505	5+	5	5		23.12.42	Normal 9.10.43	289	5	—	—	—	—	—
506	10+				13.1.43	Aborted 17.7.43	186	160	+	+	+	—	—
457	5				31.1.43	Aborted 11.7.43	161	320	+	..	+	+	—
507	10+	10+	10	10+	2.2.43	Aborted 26.9.43	236	160	+	+	—	—	—

of *Br. abortus* of moderate virulence (McEwen 161) was inoculated subcutaneously into 34 heifer calves five to seven months old.

Eight calves were killed at intervals from 58 to 182 days after vaccination. In one instance, the calf killed 99 days after vaccination, a CO_2-sensitive strain, was recovered indirectly through guinea-pigs inoculated with a suspension of the head and thoracic glands of the calf. The seven other calves were free from brucella infection. It would appear that, generally, young calves rapidly eliminate *Br. abortus* which has been inoculated subcutaneously.

The degree of protection which is set up by calfhood vaccination with 40×10^9 *Br. abortus* (McEwen 161) is of a high order when the heifers are exposed to infection 18 months later when approximately four and a half months in calf. Of 14 vaccinated heifers exposed to infection at this time, twelve produced normal calves and themselves showed no evidence of brucella infection; one aborted and one had a premature calf. Both of the latter animals and their calves were proved to be infected with *Br. abortus*. Of eight unvaccinated heifers similarly exposed to infection, six aborted, one calved prematurely and one calved normally. All the unvaccinated animals were proved to be infected with *Br. abortus*.

When twelve vaccinated heifers were exposed to infection 32 months after vaccination, when they were approximately four and a half months pregnant, three aborted and one gave birth prematurely, all being proved to be brucella infected. The remaining eight vaccinated animals produced normal full-time calves and attempts to recover *Br. abortus* from them failed. Of six unvaccinated heifers similarly exposed to infection five aborted and were proved infected and one calved normally. Brucella infection was not proved in this latter animal.

There are reasons for regarding McEwen strain 161 as unsuitable for use as a calfhood vaccine.

V

Group of Vaccinated Heifers

Duration of pregnancy (days)	Agglutination titre of blood at calving	Bacteriological examination of foetus, colostrum and milk samples											
		Foetal membranes		4th stomach		Other organs		Colostrum		1st milk sample		2nd milk sample	
		Culture	G.-pigs	Culture	G.-pigs	Culture	G.-pigs	Culture	G.-pigs	Culture	G.-pigs	Culture	G.-pigs
279	Tr. 10	—	—	..	..	..	..	—	—	—	—	..	—
285	0	—	—	..	..	..	..	—	—	—	—	..	—
278	0	— (Swab)	—	..	..	..	..	—	—	—	—	..	—
255	640	+	..	+	..	+	..	..	..	..	..	..	..
227	160	+	..	+	..	—	..	—	..	..	..	..	..
280	0	—	—	..	..	..	..	—	—	—	—	..	—
282	0	—	—	..	..	..	..	—	—	—	—	..	—
211	320	..	..	+	..	+	..	—	..	..	..	..	..
207	80	— (Swab)	+	—	—	—	—	—	+	..	..	..	..
283	0	—	—	..	..	..	..	—	—	—	—	..	—
290	0	—	—	..	..	..	..	—	—	—	—	..	—
286	0	—	—	—	—	—	—	—	—	—	+	..	—

† Calf killed. ‡ Calf dead when delivered.

The view is advanced that calfhood vaccination requires reinforcement during adult life to keep resistance at a high level.

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The Recreations of Veterinary Surgeons *

TOM HARE, M.D., B.V.SC., M.R.C.V.S.

Honoured by your invitation I am in duty bound to comply with the rules of the Mid-West Division. It is laid down that the prime purpose of its meetings is the advancement of veterinary surgery. Customarily it is inferred that this advance depends upon the acquisition of knowledge of our art and science; but the rule will also bear the inference that the advance equally depends upon the qualities of the individual veterinary surgeon. I feel I am satisfying your rules, and yourselves, I hope, by bringing the veterinary surgeon on to the stage instead of his art and science.

The practice of veterinary surgery is an exacting vocation; it demands and takes the best out of each of us. How do we renew what we have expended; how do we *re-create* ourselves? I am speaking of something other than *refreshment*, the desire for which is innate and the satisfaction of which is obtainable without exercise of the will. But a man's recreation is his making himself anew; a building up of his whole self, body, mind and spirit; a creative activity of his leisure. Unaware of any precedent to which I could turn for guidance I made a list of my colleagues whose recreations were known to me. I found the usual objective technique of analysing the data somewhat difficult. Nearly everyone has several recreations, some of which were uncommon, and thus made classification diffuse and unwieldy. On the other hand, some veterinary surgeons, whom I will term the "submerged tenth," appear to be content with refreshment and do not come within the scope of my paper. Eventually, I arbitrarily subdivided the subject under five headings and allowed my thoughts and memories to flow with the mood of the moment. The result resembles a catalogue but it may convey some ideas which you can amplify from your own experience.

Nature

Most of our colleagues seek recreation in nature. First I will speak of the domesticated nature which is familiar to us in and about our homes, of

> ". . . the luxury
> Of leisured gardens teeming with affection'd thought,
> The heartfelt secrecy of rustic nooks, and valleys
> Vocal with angelic rilling, of rocky streams,
> By rambling country lanes, with hazel and thorn embower'd
> Woodbine, bryony and wild roses; . . ."
>
> Robert Bridges, *The Testament of Beauty*.

* Presented to the Mid-West Division, N.V.M.A., at Bath, November 8th, 1946.

The garden of the late Dr. Charnock Bradley (1871-1937; New Ed., 1892) teemed with his affectioned thought; when wearied by a day's business in council his eyes would light up as talk turned to his delphiniums. The charm of another past-president of the Royal College of Veterinary Surgeons, the late G. H. Livesey (1874-1943; Ed., 1899), was felt as he talked with expert knowledge of orchid, gardenia and other blooms of the conservatory. If our connoisseurs of plants are few, many find joy in the tending of their gardens.

To many of us the idea of entering the profession came from our boyhood interest in rabbits, pigeons or bantams; and despite the war we have striven to maintain the family of pets which are an essential of our home life. The desire of some graduates for horses, dogs or farm stock has influenced the location and size of their practice. Some have attained high standing among breeders, exhibitors or judges of livestock. I recall the late Alexander Lennox (New Ed., 1884) who was friend and guide from my childhood and took me about his practice teaching me the husbandry of farm stock. Lennox was a fancier of the Aberdeen Angus and the artist in fattening bullocks some weeks ahead of the traditional techniques of the Lincolnshire feeders. By a strange coincidence the year in which Lennox died (1926) saw the birth of my friendship with the late Henry Gray (1865-1939; Lond., 1885) who was an eminent fancier of aviary birds. As a student I was impressed by two of our Lancashire fanciers, T. Eaton Jones (Lond., 1894), who did so much for the improvement of the draught horses of Liverpool, and Gladstone Mayall (Glas., 1895) whom I should call the Henry Gray of the North of England. As I use the word, a fancier is something more than the connoisseur of animals; he has something akin to the creative faculty of the artist by which he can attain a result beyond the reach of the rational method.

Much of the growth of natural history in Great Britain and the Empire has been sustained by men and women who have found recreation in the observation of wild fauna and flora. Colonel G. H. Evans, C.B.E., C.I.E. (Lond., 1884), has contributed important studies of the reptilia of Burma and is the author of the standard work on the natural history of the elephant (1st edition, 1901; 2nd revised edition, 1910). John Keast Lord (1818-1872; Lond., 1844) was a more catholic naturalist. He gave up his practice in Tavistock, Devonshire, to join a whaling expedition and subsequently in the Hudson's Bay territory he made a valuable collection of fauna which is now in the British Museum, South Kensington. He contributed to the *Field* and in 1866 joined the staff of the newly established *Land and Water*. The catalogues of his collections of lepidoptera and hymenoptera made in Egypt were published in 1871. He was the author of "The Naturalist in Vancouver's Island," two vols., London, 1866; "At Home in the Wilderness" (by "The Wanderer"), London, 1867; and he helped in an enlarged edition of Galton's "Art of Travel." His brother, William Barry Lord (Lond., 1848), on retirement from the Army, devoted himself to natural history.

Of our explorer-naturalists I would recall the late Colonel R. J. Stordy, C.B.E., D.S.O. (Ed., 1894; died 1943) who had an unrivalled knowledge of East Africa, particularly of Abyssinia. Many of you will gratefully remember his work on behalf of N.A.R.P.A.C. Time prevents my mentioning others from among our colleagues of the Royal Army Veterinary Corps and Colonial Veterinary Services who have penetrated into rocky wastes and great spaces. I must pass on to William Moorcroft (1767-1825) who stands first in time and achievement. Moorcroft was born in Lancashire. When studying medicine at Liverpool Infirmary he was selected to investigate a serious epidemic among the cattle of the district. His work having been commended by the immortal John Hunter (1728-1793) Moorcroft turned to veterinary surgery and graduated in France. In 1792 he started practice in London and in February, 1794, he was appointed principal of the Royal Veterinary College jointly with Coleman. Two months later Moorcroft resigned. In 1808 he proceeded to India as superintendent of the East India Company's stud in Bengal. In search of better horses for cavalry and plants for feeding horses he explored the routes through the Himalayas, first from Nepal into Eastern Tibet and, seven years later (1819), from Kashmir and Western Tibet into Central Asia. In 1825 he reached his goal, Bokhara. He was murdered on the return journey, August 27th, 1825. In reviewing Moorcroft's "Travels in the Himalayan Provinces of Hindustan and the Paniab . . . from 1819 to 1825," edited by Professor H. H. Wilson, 1841, the *Athenaeum* observed: "When we take into account the difficulties experienced by those who followed in his [Moorcroft's] track, we hardly know how to express sufficiently our admiration for his hardihood and address, and to do him justice we must remind our readers that not only did death overtake him at a time when he had triumphed over the chief difficulties of his undertaking, but that his papers remained unnoticed until they who followed his example had carried off the honours that were justly his due."

Before ending this section I would pause to pay homage to Moorcroft's great contemporary, Edward Jenner (1749-1823) who was born in the Mid-West Division's area and practised medicine in Berkeley, Gloucestershire, a few miles from here. He discovered the method of preventing smallpox by vaccination with the virus of cowpox and published his findings in 1798. Jenner found his recreation in natural history. He unravelled the method by which the young cuckoo removes fledgelings or eggs from the foster-parents' nest, he studied the effects of manures on land and observed the temperature and digestion of hibernating animals. One day the Mid-West Division might choose to make pilgrimage to Berkeley and express the indebtedness of veterinary surgery throughout the world to the Father of Immunology.

Sport

I know several members of the profession who, as students, played for their university or county in rugger, soccer, cricket and boxing; I can recall only one international, J. W. Thwaite (L'pool, 1922), who was capped for Britain in 1922 and won the 200 metres. I fear the inclusion of students in a survey of graduates of the Royal College of Veterinary Surgeons is hardly cricket; my first sentence should be no-balled. After graduation very few of our athletic stars continue in the first-class firmament. A curve of the physical and emotional output demanded by sport would show the athlete's initial steep rise to maximum followed by the long drawn-out descent when pride and craft are struggling against declining vigour until the curve flattens out with player turned spectator, historian of sport, reader of Wisden or Surtees and teller of yarns.

Where upon this curve should I pin such talented M.F.H.'s as G. P. Male (Lond., 1902), W. F. Aston (L'pool, 1917) and F. Beckett (L'pool, 1924) or our many colleagues of the Royal Army Veterinary Corps who, at home and overseas, have maintained the high tradition of the Corps for horsemanship? Then there comes for special mention Capt. Geoffrey H. Bennett (Lond., 1916) who won the Grand National on Sergeant Murphy. Bennett met his death by a fall in a steeplechase in 1924. Other colleagues have ridden without winning the classic at Aintree. I am so imperfectly informed about the turf that I look to others to tell us of the jockeys and owners of our profession. From my short experience of the sport polo has the exacting qualities of rugger, in comparison with which hunting is tame. Nowadays, after about my sixth over in a leisurely cricket match I am apt to think that with the help of strategy (or is it guile?) maturity can sometimes break the wicket of lusty youth. If it isn't intelligence, what keeps men in the saddle after they have passed through the presidential chair of the Royal College? Is the clue to be found in R. W. Emerson, "English Traits"? "They [Englishmen] came honestly by their horsemanship, with Hengist and Horsa for their Saxon founders. The other branch of their race had been Tartar nomads. The horse was all their wealth. The children were fed on mare's milk. The pastures of Tartary were still remembered by the tenacious practice of the Norsemen to eat horseflesh at religious feasts."

Such ancestry and diet should have produced a veterinary member of that hunting fraternity whose conscience-money provided Bristol with her beautiful pirate churches. From the ranks of our sister profession came Dr. Thomas Dover (1660-1742) who began practice in Bristol in 1684, whence in 1708 he sailed as second-in-command of a privateering adventure on the Spanish Main He is famous for two discoveries. He found Alexander Selkirk on Juan Fernandez (1709) which made possible Daniel Defoe's "Robinson Crusoe"; secondly, he discovered Pulv. ipecac. Co. Pirates remind one of some of our yachtsmen who in 1939 gave up practice for service in the Royal Navy. P. J. Cautley (L'pool, 1930), G. S. Peyton (Lond., 1931) and Ian Frost (Lond., 1935), as officers, R.N.V.R., have commanded ships of war. Mrs. Beatrice Everett (Lond., 1931) was second officer, W.R.N.S., and before he was seconded to the Board of Trade, C. E. Woodrow (Lond., 1927) served as mate, R.N.R. I am too absent-minded for racing yachts, ropes foul my legs and hard things bang my head; the yachting I enjoy is what Kenneth Graham describes as "just messing about in boats."

I keep in touch with the sport of racing pigeons; among its keen contestants we have several members of whom A. L. Bragg (Lond., 1928) is best known to me. I am reminded by birds of my bias against syndicate shooting, which is not a good thing either for nature or sport. The man behind the gun may be human but he can be wantonly destructive. Fortunately there are signs of an awareness in the sporting world of the dangerous limits to which undisciplined shooting has gone. I hope our profession will play a more active part alongside those who are working for the preservation of the wild fauna at home and abroad.

When nature puts the brake on physical and emotional output many of us find solace in tennis, golf, bowls, curling and fishing

Most of our fishermen are of that restless tribe which don waterproof in order to paddle about flicking flies at trees, sheep and people's ears. My idea of fishing is to secure a gentle or redworm, throw it into a limpid stream and leave the fish to do the hooking part of the sport. Meanwhile we coarse fishermen smoke and ruminate the words of W. H. Davies ("Leisure"):—

"What is this life if full of care,
We have no time to stand and stare.
No time to stand beneath the boughs
And stare as long as sheep and cows."

Art

I rank poetry and music first among the arts. They stir our emotions and carry us beyond the limits of the self-conscious intellect into realms of the suprasensuous vision. I cannot recall a veterinary surgeon-poet of distinction. Some of my friends have the poetic approach to nature and enjoy poetry but I do not know if any of them have published verse of their own. The appreciation of music is a less reticent affair; it is shared by many though some of them may have no understanding of its technique. Among our makers of music I would mention the accomplishments on a variety of instruments of F. N. Andrewes (Lond., 1935) who, in addition, is a connoisseur of 17th and 18th century and Morrisdance music. I know Harold Stainton (Lond., 1914), J. E. M. Spellman (Lond., 1938) and L. H. Sparrow (Lond., 1941) as violinists. Then we have two noteworthy organists in C. S. Adams (Lond., 1935), of Dursley Parish Church, and Denys Danby (Lond., 1927), of the Church of the Sacré Coeur, Wimbledon. As a boy Tom Hicks (Lond., 1905) was first soprano in the choir of Lincoln Cathedral; after his voice had settled he took the leading tenor parts in Gilbert and Sullivan and other operas for over 20 years. Most of us appear to prefer the part of spectator of the art of the theatre and to have allowed our histrionic talents to decay on leaving college. Before qualifying and taking up practice the late Edward Mayhew (Lond., 1845; died 1868) was in the theatrical profession. He was the author of a farce, "Make Your Wills" (1829) and "Stage Effects or Principles Commanding Dramatic Success" (1840). Incidentally, Mayhew's brother Henry was the first editor of *Punch*. F. Francis (Lond., 1940) is another actor turned veterinary surgeon.

The one veterinary surgeon of distinction in the plastic arts was the late Captain Adrian Jones, M.V.O. (1845-1938; Lond., 1865) who on retirement from the Army became an eminent sculptor. Two of his works of special interest to horsemen are his "Peace Quadriga" on Constitution Hill Arch and the Cavalry War Memorial at Stanhope Gate, Hyde Park. Of our members who paint or enjoy viewing art the only one known to me was the late Major-General Sir Frederick Smith, K.C.M.G. (1857-1929; Lond., 1876). His copy of "Androcles and the Lion" hangs in the Royal College of Veterinary Surgeons; of other works which he copied four have been presented by Mrs. F. Bullock to the Royal Veterinary College. I wish I knew more veterinary surgeons who enjoy studying and reading about art. As executant I am an inferior amateur but I can recommend painting as a mental and physical tonic and first-rate corrective of a frayed temper. Some of my friends have told me that they recover their poise by making music, which seems to support the thesis that we recreate ourselves by enlarging our sense of beauty.

A generation ago, according to Sir John M'Fadyean, we were not a reading profession. I have always assumed that Sir John was referring to our scientific literature. Whether or not this was fair criticism I do not think it would apply to the present generation's appreciation of professional, agricultural and sporting literature. I have the impression that we are a representative sample of the public's amiable trifling with novels and detective yarns.

"Who is more happy, when, with heart's content,
Fatigued he sinks into some pleasant lair
Of way grass, and reads a debonair
And gentle tale of love and languishment?"
Keats, "Sonnet," 1817.

Some of you may recall the interest aroused by the correspondence under the title "The Veterinary Surgeon in Fiction" which began in *The Veterinary Record* of 1924. My second impression from visiting and talking with my colleagues is that there is no widespread desire for reading, or forming a collection of, the standard and classical authors. But, as Rudyard Kipling ("A Book of Words") points out, "A man is no more to be blamed for not caring for certain forms of literature than he is for not thriving on certain forms of food." The one connoisseur of classical literature known to me was the late Registrar, R.C.V.S., Dr. Fred Bullock. He had a cultivated and refined taste in poetry and prose which he freely shared with others; his gestures and the grace of his expression revealing the spiritual gleam within. Did you ever know Fred Bullock's eyes? They were the eyes of a loving woman. Of those who find recreation in the making of non-scientific literature we have Ernest Gray (Lond., 1932) whose "Surgeon's Mate" (1942) attracted attention here and in the United States. The sequel, "Man Midwife," was published recently and I hope it will bring further success and encouragement to our first veterinary novelist.

There is a popular notion that collectors of the arts must have an innate acquisitive sense. I should prefer to believe that the urge to collect derives from the ephemeral hobbies of boyhood when the desire to possess arose out of the needs, usages and fashions of the school world. Toys, tops, conkers, pencils, picture post-cards, stamps, engine numbers, spare parts of cars were all objects of desire and barter. I suppose none of us ever completely grows out of popping things away in drawers and cabinets. As the Belgian poet, Professor Emile Cammaerts, with penetrating insight, reminded me—"You English treasure your lumber from ancient laws to beefeaters, from bric-à-brac to broken lampshades, in the firm belief that one day they will prove useful." Thus it would seem that in his early stages the collector may attach some utilitarian as well as emotional value to the object of his interest. Increasing knowledge refines his perception and appreciation not only of his speciality but of the arts in general. Finally he may attain the rank of connoisseur, who can hold his own with, and sometimes rise above, the professional expert and art dealer. Fortunately collectors are catholic in their taste. Among our colleagues I know a small number of collectors of porcelain, antique furniture, plate and postage stamps. Incidentally, for collectors of epitaphs there is a memorial, on the south wall of the ambulatory of York Minister, to the bravery of an officer and his men of the veterinary service during the Crimean War; but I cannot find the copy I made of it some years ago.

I must allude briefly to such applied arts as the decoration of the home, the preparation of food and the dress and personal appearance of the family, in which the married man is so dependent upon his wife's taste and industry. By having to attend to these desirable arts themselves our women colleagues, at the outset of their careers, might be tempted to complain that they are at a disadvantage and are debarred from the wider field of recreation available to men. If fostered such an attitude would make for indifference and neglect. By adopting a professional career a woman is still a woman and her purpose is to remain one; all else can be adjusted to that requirement of nature. The young women graduates have no occasion for concern since their more senior colleagues are successfully developing their technique of living the veterinary surgeon's life. If we men can do little to make smooth the rough places in the road they must travel at least we can strew it with flowers of encouragement and remove all thorns of criticism.

Mechanism

I have thought that all to do with mechanism should form its own group though I can think of but a few who find recreation in it. My own lack of the mechanical sense may make me unsympathetic to or unheedful of my friends' talk of the machine. I was impressed by John Hobday (Lond., 1930) taking his own aeroplane overseas when appointed veterinary officer to the South African High Commission Territories. Excusing John for not replying to one of my letters Mrs. Hobday vividly described him busily preparing to answer an urgent call by fixing one of the wings with some odd bits of wire and string. The journey was accomplished. Denis Kirk (Lond., 1937) now uses an aeroplane in his Somerset practice; I trust it is more substantially built than Hobday's machine. During the past 150 years many veterinary surgeons have invented horse-shoes, surgical instruments and mechanical aids for the patient. According to Sir Frederick Smith, T. W. Gowing (Lond., 1847; died 1886) was a London practitioner who invented various veterinary instruments including a dental set which obtained a prize at the Great Exhibition of 1851. He was the inventor of the semaphore method of signalling on railways and of the solid wheel for railway carriages. J. B. Dunlop (1840-1921; Ed., 1859) practised in Edinburgh for eight years before migrating to Belfast (1867) where during the next 20 years he built up a large practice. In 1887 he devised the pneumatic rubber tyre and applied for a provisional patent in 1888.

Society

I am using the word *society* to comprehend the mode and manners of public life, in the service of which many of our colleagues find recreation. So far as I have been able to discover it was the sole recreation of the late Sir Frederick Hobday (1869-1939; Lond., 1892); and it envigorated him. The names of many veterinary surgeons are entered on the past and present rolls of the Territorial Army. In the service of the Church we have sidesmen and

wardens; two of my friends are lay-readers of the gospel. The late Dr. Duncan Hutcheon, J.P. (1842-1907; Ed., 1871), one-time Director of Agriculture in Cape Colony, "was well known and deservedly popular in social circles in Cape Town" (*Vet. Rec.* (1906-7.) **19**, 819); he was prominent in establishing and developing the Presbyterian Church in South Africa. We play our part in the management of schools, voluntary hospitals, animal welfare societies and other charitable organizations. In the great brotherhood which is pledged to charity in the name of the Great Architect many of our brethren have attained Grand and Provincial Grand Lodge rank and honours. From among our colleagues serving the magistracy and civic affairs I would mention R. Glave Saunders (Lond., 1895) who recently completed his fifth year as mayor of Exeter. H. W. Robson, J.P. (Ed., 1896) for several years was provost of Laurencekirk Burgh. John Stewart (Ed., 1827), on account of ill-health, left his Glasgow practice and migrated to New South Wales (1840), where he set up in practice and became an extensive landowner and, ultimately, a member of the Legislative Assembly. Several colleagues have unsuccessfully contested elections to the House of Commons; the most eminent of them, Professor J. T. Share Jones (Lond., 1900) is highly esteemed in the west for his long record of service to the cultural life and affairs of Wales. Finally we should recall past and present members who have played their part in our own political affairs and the administration of veterinary societies and journals.

I would like to address a few words to our colleagues who have told me that they would take part in our politics if they were not hurt and distracted by its jealousies and pettiness. I don't think they can have appreciated politics as one of our recreations. Surely they would not avoid or give up hunting because a few of the field were livery customers in the saddle? I look upon our politics as a great game of cricket; at the wicket I go for the bowling; with the ball I go for the wicket; in the pavilion opponents are cricketers and friends. Others, with the eyes of the creative artist-craftsman, see our politics as the raw material to be worked up into something which will influence the mind and add to the glory of the profession. Each of us follows his own taste and the consequent mixture of temperaments and techniques makes our councils human assemblies. The important thing is not to bother about what the other chap puts in or takes out of politics, but what you put in. For the measure of what you put in is the measure of what you will take out. And one inestimable gift is available to us all who take part in our politics —the friendship of our colleagues.

In Conclusion

I have written subjectively of my friends and ideas and I realize my title should have been "A Commentary on the Recreations of Veterinary Surgeons." While listening to me some of you may have thought I was referring to the pre-1939 world, or have wondered how and when can the veterinary surgeon recreate himself in this era of austerity. Though war has ceased hostilities continue and there seems to be no end to the strains and stresses imposed upon wife and family. Sometimes we sicken of

> "This strange disease of modern life
> With its sick hurry, its divided aims;"
> Matthew Arnold, "The Scholar Gipsy."

Nevertheless and despite all, we have the duty to ourselves and our profession of holding fast to our standards of life. If and when better times will come I do not know; but one thing I do know. We can adjust our recreations to our needs and opportunities provided we see clearly what they portend. Whether we be breeder or judge, player or spectator, artist or connoisseur, the best must be our standard and self-betterment our aim.

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For biographical data I am indebted to the *D.N.B.*, Sir Frederick Smith's "A History of the Royal Army Veterinary Corps, 1796-1919," London, 1927, and "The Early History of Veterinary Literature," Vol. IV, London, 1933; T. K. Monro's "The Physician as Man of Letters, Science and Action," Glasgow, 1932; and "The Register of Veterinary Surgeons."

DISCUSSION

Dr. Hare's paper gave rise to much pleasant discussion, largely reminiscent in character, amongst the members present, the following being included in the many interesting additional facts brought out concerning the recreations and activities of members of the profession.

It was recalled that Mr. H. H. Truman, J.P., of March, has made a great name as a breeder and judge of the Percheron horse, the French Government having conferred on him the honour of Officier du Mérite Agricole. Racing achievement was a popular topic, and we were reminded that David Sherbrooke twice rode the Grand National, and how fine a rider, also, was F. L. Cundell. Captain John Fox said that he, himself, bred the 1919 winner of the Grand Sefton and the Welsh Grand National. The President added Lieut.-Colonel C. H. S. Townsend, O.B.E., M.C., to Dr. Hare's list of M.F.H.s. Mention of another robust sport beloved of veterinarians—rugby football—secured honourable mention for Mr. D. W. Deas, the Heriot forward, as captain of Scotland's XV for 1946. Mr. Esmond Brown, introducing the gentler theme of verse, expressed high appreciation of the essayist's quotations from the poets and quoted further verses of W. H. Davies. He recalled Sidney Nye as the author of a book of verse. Miss M. R. Silverman was brought into the literary picture by Mr. Chesney as the author of the recent detective story, "The Vet. it was that Died." Mr. C. S. Adams, who found less time for music and for training choirs than before the war, suggested that busy veterinary practitioners could find entertainment in the smaller and less time-consuming hobbies. Invention secured a high place as a worthwhile activity, it being noted in this connection that Mr. A. E. Gachet was the inventor of the rubber sheep boot. As an instance of war service in an unusual field for a veterinarian, mention was made of Mr. D. M. Hale's participation in the work of the Observer Corps, part of the time "observing" from a tug in the Atlantic.

CLINICAL COMMUNICATION

Salmonella enteritidis var. dublin Infection in a Cow resulting in an Outbreak of Human Gastro-Enteritis

by

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Introduction

Sutherland & Berger (1944) reported an outbreak of gastro-enteritis involving 162 individuals resident in an urban district in the West Riding of Yorkshire. Since each of the 79 households concerned received milk from the one farm, the milk was suspect, and, on examination, was found to contain *Salmonella enteritidis* var. *dublin*. Investigation at the farm revealed the presence in the milking stock of an apparently healthy cow which was excreting large numbers of *S. dublin* in its faeces. The animal was purchased by the Ministry of Agriculture and Fisheries and removed to the laboratory at Weybridge, where it was kept under continuous observation for some seven months, after which it was slaughtered and submitted to a *post-mortem* examination.

Although outbreaks of *S. dublin* infection in cattle are frequently reported in the Continental literature and the disease has often been recognized amongst calves in Britain, reference to the disease as it affects adult cattle in this country is less common, and, since there is reason to believe that the disease may be more common here than has been realized, a short description of the disease, as it affected this one animal, may be of value.

History

The cow had been purchased as a newly calved cow and the previous history was unknown. When received at the laboratory she was again in calf and was due to calf down in about five months time.

Before the animal arrived at Weybridge repeated samples of bulked milk were taken at the farm. These samples were examined culturally with negative results. Individual samples of milk were then taken and examined culturally and serologically. The cultural examinations were again negative. The agglutination tests showed that the whey from one sample of milk (that from the cow concerned) agglutinated *S. dublin* suspension to a titre of 1:32. The test was repeated with a further sample of milk from this cow, the titre being 1:64 on this occasion. The whey from the milk samples from the other animals in the herd failed to cause agglutination at dilutions of 1:4.

Two samples of faeces were then taken from this cow and almost pure cultures of *S. enteritidis dublin* were recovered from both samples.

Examinations Undertaken at Weybridge

Clinical

The cow was in good health and fair bodily condition when

received at the laboratory. Pulse, temperature and respiratory rate were normal and remained so until the animal was slaughtered. The faeces were normal in quantity and consistency for an animal being fed on dry feeding. At no time during the seven months' observation did the faeces become fluid.

The cow was giving over two gallons of milk per day and was subsequently dried off prior to calving a bull calf five months after arrival at the laboratory, *i.e.*, two months before slaughter when she was again milking normally.

The calf was normal and remained so till its disposal.

Faeces

Shortly after the cow's arrival at the laboratory the faeces were cultured and were found to contain *S. enteritidis dublin* in large numbers. Thereafter cultures were made from the faeces on many occasions, at intervals of up to a month, and on only one occasion were the cultures negative. On this occasion a newly prepared batch of tetrathionate medium was used and this may have had some bearing on the result.

Two culture methods, an enrichment and a direct, were used. In both cases serial dilutions in broth were made in order to get an indication of the number of *S. dublin* present. In the enrichment method 1 gramme of freshly collected faeces was suspended in 10 c.c. of broth and serial dilutions in broth were made to 10^{-6}. Each of four tubes of Kauffmann's variation of Müller's tetrathionate medium (Kauffmann, 1941) was then inoculated with 1 c.c. from each dilution. The tubes were incubated overnight at 37° C. Next day a loopful from each tube was used to inoculate a MacConkey plate, the plates being then incubated overnight at 37° C. In the morning each non-lactose-fermenting colony from suitable plates was tested by slide agglutination against *S. dublin* serum. On one occasion growth occurred in the 1:10,000 dilution, at all other tests growth ceased after dilutions of 1:1,000.

For the direct method MacConkey plates were inoculated with a loopful of known volume of a similar series of broth dilutions. After incubation *S. dublin* colonies were counted and the number of organisms per gramme of faeces calculated. This number varied from a maximum of 2,580 in January, 1944, to a minimum of 166 in March, 1944, with an average of 1,120 over the whole period.

Serology

Flagellar and somatic antigens were prepared from the isolated strain and tested against the serum from the cow, when the following titres were obtained:—

"H" (flagellar) antigen 1:320
(on one occasion the titre reached 1:640)
"O" (somatic) antigen 1:160

The same antigens were used to test for the presence of agglutinins in the milk whey. With the "H" antigen agglutination was complete in dilutions of 1:10 but no agglutination of the "O" antigen could be produced with the whey in any dilution.

Post-mortem Examination

The cow was slaughtered at the laboratory and a *post-mortem* and subsequent bacteriological examination carried out. The only macroscopic lesion was a marked thickening of the wall of the gall bladder which measured 1 cm.

For the purpose of the bacteriological examination samples were taken from the four stomachs, the gall bladder and urinary bladder, the liver, spleen and kidneys, the major lymphatic glands and from 18 places in the bowel. In the case of the bowel two samples were taken from each site, one of faeces, and one from a scraping of the mucous membrane. All samples were plated direct on MacConkey's medium and in addition the bowel samples were inoculated into tubes of Kauffmann's tetrathionate. Plates and tubes were incubated aerobically at 37° C. for 24 hours. A loopful from the tetrathionate tubes was then inoculated onto MacConkey plates which were in turn incubated overnight. Non-lactose-fermenting colonies were picked from suitable plates and tested by slide agglutination against *S. dublin* serum.

The urinary bladder, liver, spleen, kidneys, and lymphatic glands furnished no growth on the plates. No salmonella was isolated from the stomachs, but a few lactose-fermenting organisms were recovered from the rumen and omasum.

S. enteritidis var. *dublin* was isolated in pure culture, and in very large numbers, from the gall bladder and in smaller numbers from the various portions of the bowel, as shown in the table (Table I).

Table I

Comparison of Direct and Enrichment Methods of Culturing

Organ	Duodenum		Jejunum					Ileum				Caecum	Colon			Rectum		
Direct ...	+ (10)	O	O	O	+ (1)	+ (20)	+ (10)	O	+ (20)	+ (2)	+ (100)	+ (20)	+ (35)	+ (15)	+ (6)	+ (70)	+ (30)	+ (30)
Enrichment	+	O	O	O	O	—	—	+	—	O	+	O	+	+	+	+	+	+

+ = Non-lactose fermenting colonies positive to *S. dublin* serum.
O = No growth on plates.
— = Non-lactose fermenting colonies negative to *S. dublin* serum.
( ) = The number of colonies of *S. dublin* isolated by direct culture.

The faeces of the calf were cultured using the enrichment method and numerous non-lactose-fermenting colonies developed on the MacConkey plates. These colonies were all negative to *S. dublin* serum on slide agglutination tests.

Urine

Urine samples were taken by catheter and 1 c.c. was inoculated to a tube of tetrathionate medium. This was incubated overnight at 37° C. and then a loopful was inoculated into a MacConkey plate which was in turn incubated overnight at 37° C. At no time were salmonellae recovered in this way.

Washed centrifuge deposits of urine were inoculated direct on to MacConkey plates with similar negative results.

Milk

Milk samples were taken in two ways:—

(*a*) Ordinary hand milking into a bucket.

(*b*) Quarter samples into sterile flasks after washing the udder and cleaning the teats with ether.

Culture was both direct (0·5 c.c. on to a MacConkey plate) and by enrichment (1 c.c. into tetrathionate and subculture on MacConkey).

Samples taken with sterile precautions were at no time found to contain *S. dublin*. On one occasion the sample from the bucket was found to contain *S. dublin*; presumably from faecal contamination.

The table also summarizes the results obtained by the two different methods of culturing employed. It will be seen that positive results were obtained more often by direct plating on MacConkey than by plating after growth in Kauffmann's tetrathionate, even although the original inoculum was very much larger in the latter method.

During the course of these investigations the faeces of 26 other cattle then at the laboratory were examined for *S. dublin*. In two cases a non-lactose-fermenting organism was recovered but in neither case was the organism a salmonella.

DISCUSSION

Although Edwards & Bruner (1943) have stated that the incidence of *S. dublin* infection among cattle in the United States of America is low, it is generally recognized that in Europe it is the principal salmonella of the bovine. In this country attention has, so far, been largely focused on the infection of calves in which, according to Bosworth & Lovell (1931) and Craig, Davies & Massey (1941), the disease takes a septicaemic course often resulting in death, the organism being recovered from the blood, lungs, liver, spleen and sometimes from the joints. Milder cases resemble "white scour."

The reservoir of infection has not been definitely established and Craig and his colleagues, using both cultural and serological methods, failed to demonstrate infection among the adult stock in their outbreak in calves. Edwards & Bruner (1943) say that *S. dublin* is common in silver foxes in America, and Savage has isolated *S. enteritidis* from rats and mice, so that a small mammalian carrier is a possibility. It is also possible that the organism

may exist for some considerable time outside the host in loose boxes, calf pens, and such places.

More important from the public health point of view is the infection of adult cattle. According to the reports of Savage & White (1925), Smith & Scott (1930), and McAllan & Howie (1931), the majority of cases of *S. dublin* infection in man are caused by the consumption of contaminated cow's milk. John (1946) has reported the recovery of small numbers of *S. dublin* from the milk of infected cows but the method of taking the milk samples is not stated. In all cases contamination of the milk with faeces from an infected animal must be regarded as the real danger. In the above cow cleanly taken milk samples were never infected and Rievel (1933) kept for 18 months four cows which were excreting *S. dublin* in the faeces, and at no time did he recover the organism in the milk.

It would now appear to be desirable that in all cases of persistent or transient diarrhoea in cattle, a cultural examination of the faeces for the presence of *S. dublin* should be carried out at the same time as the usual examinations for *Mycobact. johneii*, coccidia, and helminth eggs and larvae. The practical detection of an animal, such as the one discussed above, showing no clinical symptoms yet daily voiding in its faeces hundreds of thousands of pathogenic organisms, before infection of human beings makes its presence apparent, still remains a problem.

Conclusions

(1) Cattle may harbour and excrete *S. dublin* for very long periods.

(2) Such cattle do not necessarily show clinical evidence of infection.

(3) The gall bladder may be the reservoir in the affected animal.

(4) Milk is dangerous because of the risk of faecal contamination.

Acknowledgment.—The authors wish to record their thanks to Dr. A. W. Stableforth, Head of the Bacteriology Dept., for the assistance which he gave during the preparation of this paper.

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AGE OF COWS IN MILK-RECORDED HERDS

"The length of working life of his dairy cows is of vital importance to every dairy farmer," observes the *Home Farmer* (the journal of the Milk Marketing Board) in its February issue, and continues: "In the short term view it affects him in his efforts to get suitable replacements to keep up his monthly cheque through a steady milk supply; we are familiar with the expense and worry of buying cows, and these are multiplied ten-fold for the T.T. producer. To look further ahead, it affects him in his breeding policy to give him in years to come the herd he would like to own to-day. The aim is the same—a good herd. Let us examine the position in our recorded herds, our best herds.

	Pedigree	*Non-Pedigree*
Total number of lactation records examined ...	25,000	50,000
Proportion of these:	per cent.	per cent.
1st Calf lactations	26	26
2nd ,, ,, ...	22	23
3rd ,, ,, ...	18	18
4th ,, ,, ...	13	13
5th ,, ,, ...	8	8
6th ,, ,, ...	6	5
7th ,, ,, and over	7	7
	100	100
Average number of times calved	3·1	3·1

"The position is not reassuring, even if we make full allowance for the practice of cows leaving herds to go elsewhere to give their new owners more years of good milking service.

"It pays to have cows which last a long time—cows that go on year after year at about the same level of production—because:—

(*a*) A cow reaches her best performance in the sixth lactation or thereabouts (the above figures show that only one cow in eight lives to do this).

(*b*) A long milking life in a cow enables the farmer to spread the cost of her rearing over a longer period and a larger gallonage.

(*c*) A long working life means more calves; more calves mean more heifer replacements and a better chance of effective culling.

(*d*) As a herd with a long working life becomes established the farmer can start to restrict his rearing to calves from his leading cows only, and so to concentrate more and more on his *milking herd*."

REVIEW

[**Diseases of the Pig and its Husbandry.** By D. J. Anthony, M.R.C.V.S., D.V.S.M., F.R.San.I. 2nd Edition, pp. viii+287, 53 figs. Baillière, Tindall & Cox, 8, Henrietta Street, London, W.C.2. Price 15s.]

During the war years little advance has been made in our knowledge of the diseases of pigs and owing to the shortage of feeding-stuffs and the consequent decline in the pig population veterinary research has been concerned with animal diseases of greater economic importance. Presumably it is for this reason that Anthony's second edition of "Diseases of the Pig" contains very little new material and still fails to enlighten our knowledge of the many obscure diseases encountered in general practice. Several chapters have, however, been amended in the light of the recent advances which have been made in general therapy.

Chapter III, dealing with Housing and Management, has been enlarged and contains a welcome description of the Scandinavian type of piggery as adopted in this country. No reference has been made, however, to the Waldman System of Pig Rearing, the McClean County System, or the use of electric fences, farrowing crates or nose rings.

Chapter VI deals with the Scheduled Diseases. The problems of swine fever are of such importance that the reviewer considers that more than the present eleven pages should be devoted to this particular subject. Under this heading the author has failed to stress the risks of spread of this disease by swill and pig castrators, and no reference has been made to the fact that swine fever is the only disease which affects pigs of all ages.

When discussing foot-and-mouth disease the author has also failed to mention the importance of boiling swill for at least one hour to prevent the spread of the disease. In view of the regrettable experience in this country during the war years such an omission in this chapter is inexcusable.

The chapters describing "Local Diseases" constitute a catalogue of all the pathological conditions which may occur in the different organs. Many of these conditions occur so seldom as separate entities that they are of no significance to the clinician and it is regrettable that important conditions such as scour, pneumonia, urticaria, etc., should lose their significance by being classified with such remote conditions as arteriosclerosis, diaphragmatic hernia, and tachycardia.

Chapter XIII, dealing with Animal Parasites, may also be described as a catalogue of all the parasites which have been encountered at some time or other in pigs, not necessarily in this country but even in Japan, China and South America. Many such references appear unnecessary in a book of this kind.

Chapter XIV, describing "Poisons and Poisonous Plants," also constitutes an alarming catalogue of all the poisons which have been suspected and not necessarily confirmed in pigs, and reference to which appears redundant here and would be more appropriate in a text-book confined to toxicology.

Taking the book as a whole there are also noticeable discrepancies in some of the paragraph and chapter headings. Thus, circulatory, bone and joint diseases are grouped under Diseases of the Respiratory Tract, and diseases of the skin and teeth are described in the chapter entitled Diseases of the Nervous System. The paragraph headed "Signs of Health" also deals with the signs of ill-health and the administration of medicine.

In the preface to the first edition to the book the author commented on the possibility during war-time of some of the intensive methods of breeding and rearing of pigs being abandoned with a return of the cottager's pig. Thus with the growth of pig clubs and the present restricted importation of pig food the author's presumption has proved correct, and "Diseases of the Pig" in its present form is particularly useful to the clinician dealing with disease in the individual animal.

It is to be hoped, however, that we shall soon see a return to more normal conditions with a consequent increase in the pig population. When this occurs the clinician will be more often confronted with pig disease as a herd problem. If "Diseases of the Pig" is to become our standard book of reference it will be necessary for a future edition to give due prominence to the problems of differential diagnosis. Thus a chapter on *post-mortem* technique, and, consideration of the significance of various lesions found in different pigs in the same herd coupled with the symptoms present in ailing pigs, would prove an invaluable guide to the practitioner.

Despite these many criticisms the reviewer appreciates that the veterinary profession is indebted to Mr. Anthony for producing the only text-book dealing with diseases of pigs, and it is hoped that such criticism will be accepted as constructive by the author and that, to quote his own words, "the book will stimulate our research institutions to further work on those conditions affecting pigs which cause such great losses to pig breeders."

ABSTRACTS

[Present Status of Gelatin Sponge for the Control of Haemorrhage, with Experimental Data on its use for Wounds of the Great Vessels and the Heart. Jenkins, H. P., Senz, E. H., Owen, H. W., & Jampolis, R. W. (1946.) *J. Amer. vet. med. Ass.* **132**. 614-619. (8 Figs.).]

This is an interim report on the use of gelatin sponge, an absorbable haemostatic agent. It has the property of adhering to extensive areas of haemorrhage and undergoes absorption in about five weeks, although in infected areas it becomes liquefied in one week or less. Some previous workers have suggested that the sponge should be soaked in a solution of thrombin but the authors used it dry in most of their cases. It is stressed that the sponge is not a substitute for ligature or suture but that, where such procedure is impossible or inadvisable, it may be used with advantage. In many situations, *e.g.*, wounds of the liver or heart wall, it is sufficient to apply the sponge with digital pressure for five to ten minutes when it will have adhered and no further bleeding will occur. In experimental wounds of the aorta in dogs it was found necessary to surround the vessel with a cuff of the sponge reinforced with chromicized catgut and sutured in position, since, without the reinforcement, " blowouts " occurred in four to six days due to friability of the sponge. In the case of experimental wounds of the vena cava simple pressure on the cuff of sponge was sufficient to prevent haemorrhage but it was considered advisable in most cases to cover the area with pleura or peritoneum. Thrombus formation occurred only once in 27 cases of experimental wounds of the vena cava and only once in 22 cases of experimental wounds of the aorta in dogs.

A summary of the use of the sponge in 140 clinical cases is given. Its use is suggested for controlling haemorrhage in partial hepatectomy, in the removal of large tumours, in the freeing of abdominal adhesions and in any case where ligation or suture is impossible or contra-indicated. It may also be an ideal first-aid dressing to prevent loss of blood from large accidental injuries. One possible disadvantage is that, in contaminated areas, where the sponge may be rapidly liquefied, it would form a culture medium for the organisms present.

The probable mode of action of the sponge as a haemostatic agent is by acting as a framework on which clot formation can occur and this action is enhanced by soaking the sponge in thrombin solution. In the healing process the sponge, until it is absorbed, acts as a framework on which fibroblasts can proliferate, thus supporting and protecting the process of wound repair.

(The sponge used was supplied in sheets measuring 3½ in. by 4½ in. by ¼ in., sterilized by heat and packed in sealed glass jars. These could be compressed to a thickness of one-sixteenth of an inch.)

J. W. D.

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[The Effect of Vitamin Supplements upon Survival of New-born Calves. Hansen, R. G., Phillips, P. H., & Rupel, I. W. (1946.) *J. Dairy Sci.* **29**. 761-766.]

The object of these experiments was to determine the amount of vitamin A needed by calves deprived of colostrum and fed from birth on skimmed milk. The values of adding nicotinic acid and biotin respectively were also tested. All the calves were given 250 mg. of ascorbic acid daily.

Preliminary experiments showed that with a ration of skimmed milk most of the calves which died did so during the first week of life and little trouble was encountered with older animals. Survival for a period of 14 days was therefore taken as a suitable basis for assessing the value of added supplements.

The minimum requirement of the new-born calf for vitamin A in the form of fish-liver oil was 10,000 i.u. per day but 25,000 greatly enhanced the chance of survival. When sufficient vitamin A was provided the addition of nicotinic acid had no obvious effect. The level of vitamin A in the blood plasma of calves at birth was only 4 microgrammes per 100 ml., but the feeding of colostrum brought about an immediate rise to 10 microgrammes or more per 100 ml. The plasma level of the vitamin did not reach the normal value within a 36-hour period when 10,000 i.u. of vitamin A were given to new-born calves deprived of colostrum, but 25,000 i.u. daily produced values comparable to those in animals receiving colostrum. It appeared that a rapid rise of vitamin A in the plasma to a level of 9 to 10 microgrammes per 100 ml. is necessary to ensure a favourable chance of survival.

Since the biotin content of colostrum is low and variable a number of calves were given 150 mg. subcutaneously and orally, in addition to vitamin A and nicotinic acid. There was no marked effect on the incidence of diarrhoea or on the survival rate.

Diarrhoea occurring during the first week after birth in calves given skimmed milk alone was much more frequent during the first six months of the year (86 per cent.) than in the last six months (43 per cent.). This seasonal effect was also seen in the survival rate, 64 per cent. of calves born in the first six months of the year surviving and 92 per cent. of those born after June. These figures apply to calves given vitamin supplements. One of the factors which may be responsible for this seasonal difference is nutrition and since it has been shown that summer milk is superior to winter milk when fed to rats it may well be that skimmed milk contains during the summer a factor or factors which exert a favourable effect on survival. Improved intra-uterine nutrition or foetal storage of metabolites may also be involved.

E. G. W.

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[The Role and Efficiency of Animals in Utilizing Feed to Produce Human Food. Maynard, L. A. (1946.) *J. Nutr.* **32**. 345-360.]

With the threat of famine in large areas of the world, steps are being taken to curtail livestock feeding in the United States, as in this country, in order to conserve grain for other countries in need of it. The production of meat, eggs and milk from crops which might otherwise be consumed directly by man involves considerable wastage of the basic food supply as measured in calories. This editorial review considers the literature dealing with the relative efficiency of different species of farm stock in producing food for human use, the relative nutritional value of these foods, and the extent to which foods of plant origin can satisfactorily replace them in the human diet.

Figures given by different workers for the efficiency of animals in converting gross energy of their food into gross energy of human food vary widely but the author gives a table in which a fair average value is quoted.

	Percentage recovery of gross calories in edible product	
	Range	Average
Pork	15–25	20·0
Milk (dairy cows) ...	12–18	15·0
Eggs	6–9	7·0
Poultry meat	4–6	5·0
Beef	3–6	4·0
Lamb	3–6	4·0

These figures apply to animals under good conditions of nutrition and management. A second table gives the total amount of food and the amount of concentrates which are consumed for the production of 2,600 calories of human food. Whilst the lamb consumes the greatest amount of food (74·5 lb.) to produce the 2,600 calories of meat, only 4·7 lb. of it is concentrates. For production of eggs and poultry meat the total food required is less (22 lb. to 30 lb.), but most of it is concentrates. Pork production is most efficient, only 7·7 lb. of food being required for 2,600 calories of human food, but almost all of it is concentrates. Milk production is almost as efficient as pork as regards total food required (9·3 lb.) and only about one-quarter consists of concentrates. If, therefore, the consumption by animals of food which otherwise could be eaten by man is considered, milk production is the most efficient method: pork production is less efficient than lamb, and poultry production is the least efficient. A fallacy in the argument is, however, that land used for production of grass or hay to feed cattle might otherwise be used for growing crops to be consumed directly by man. Furthermore, where a few pigs or fowls are kept on a farm and subsist largely on products which would otherwise be wasted these species become as efficient as cattle or sheep consuming roughage. Commercial egg production is probably the most serious competitor for human food since it requires large amounts of concentrates, as well as cod-liver oil and sources of riboflavin which are urgently needed as supplements for the human diet in many countries.

As converters of protein of feed into protein for human use, milk production is again the most efficient method, with beef and lamb as the least efficient. When minerals and vitamins are considered, the various food products are seen to make very varied contributions and it is difficult to decide which should be given priority. Milk is probably the most valuable, with eggs very little behind. In putting milk first importance is attached to the fact that it is of special value for infants and children and that its content of some of the vitamin B group (thiamin, nicotinic acid, riboflavin) is derived from rumen synthesis whereas these vitamins have to be provided in the diet of poultry and could with greater advantage be added directly to the human diet.

The main conclusions drawn from this survey are:—

1. Pasture, hay and silage should be used to the utmost for dairy cows so as to conserve concentrates for human food. Since the use of concentrates improves the efficiency of milk production,

(*Concluded at foot of Col.* 1, *p.* 126)

LEGAL NOTES

Inoculation Risks

Legal Liability of Veterinary Surgeons Providing and Using Defective Materials

The decision of Mr. Justice Hallett on November 4th, at the Chester Assize, in the case of Dodd *v.* Wilson & McWilliam, is of very great importance to veterinary surgeons. By it a firm of veterinary surgeons were held liable to pay damages for injuries to two herds of cattle resulting from inoculations. There was no suggestion that they had been in any way negligent in their work. They were liable simply because it was found that the substance which they provided and used for the inoculations was not a safe and proper substance for its purpose. They were not held liable because of any failure to discover this before the damage was done, but their legal position was none the less that as they impliedly undertook to use proper materials they had rendered themselves liable because they broke their contract.

The veterinary surgeons in this case successfully claimed an indemnity from their suppliers. But the existence of a right to indemnity will not always provide protection from such inoculation risks, as will appear later. The learned Judge admitted that the case was a new application of the law. It is indeed arguable that it is more than that (new law, in effect) because it imposes on a professional man when carrying out his skilled work a responsibility which may go far beyond his commonly recognized duty to exercise proper care and skill.

The law is now as explained in this article and has been applied in the case of a garage repairing a car and fixing (defective) parts, a dental surgeon making dentures (which did not fit) and a hairdresser using (deleterious) hair dye. It is, however, possible that should a case of a doctor, surgeon or veterinary surgeon providing and using defective materials ever come before the Court of Appeal it might yet be held that in the absence of negligence in his professional duties he is not liable and that these professional duties may well include the selection and provision of necessary materials.

It is therefore proposed in this article to examine the facts of the case and to consider the implications it has for the profession.

Facts of Dodd's Case

The case arose out of inoculation to prevent summer mastitis. The Plaintiffs were two brothers who each owned and kept on neighbouring farms a pedigree herd of Friesian cattle. They had for a long time been clients of the Defendants, a firm of veterinary surgeons, whom they consulted from time to time about the care of their cattle. In June, 1945, wishing to avoid the ravages of summer mastitis, the farmers enquired whether there was any effective prophylactic. Inoculation with corynebacterium toxoid was discussed. The veterinary surgeon said that he had used the toxoid with success on other herds, and that while he would not guarantee that it would prevent or cure summer mastitis it could at any rate do no harm. The farmers then asked him to come and inoculate both herds as soon as possible. The veterinary surgeon had to order a fresh stock of toxoid because he had insufficient to do all the cattle, and when he came to do the inoculation on July 9th he first used up his old stock, and continued with the new supply. Sixty cattle, cows and heifers (30 from each herd) were in fact inoculated with the new supply. Very soon after inoculation—within half an hour to three-quarters of an hour—the cattle on both farms showed signs of illness. It was proved that all 60 of the cattle so affected had been inoculated from the new supply. These sweated profusely and collapsed, some dying. Later effects were abortions, stillborn calves, considerable reduction in milk yields, and sterility. Thereupon and for these catastrophic results the farmers sued the veterinary surgeon and his partner, alleging that they had relied upon his skill and judgment in the matter and his express warranty that the toxoid was suitable for inoculating cattle and was in no way harmful. Alternatively they claimed that if what the veterinary surgeon had said about the toxoid did not amount to such an express warranty a similar warranty should be implied in the circumstances.

It should here be explained that in the case of a Sale of Goods the law does imply certain terms (" conditions " and " warranties ") into the contract where the parties have not expressed their intentions. The explanation of this is that the law normally tries to give legal effect to normal business practices, because that is usually the intention and desire of the people making contracts. In the most common form of contract—to buy or sell goods—the normal practices of merchants are so well known that the law reads into their contracts many terms which they do not make expressly. These terms are called " implied conditions and warranties " and they have been recognized by Act of Parliament (the Sale of Goods Act, 1893). But they are, of course, only implied in the absence of any contrary intention expressly shown by the parties. One of these implied terms arises where goods are bought from a seller who normally deals in that kind of commodity and those goods are bought for a particular purpose which is made known to the seller, whose skill and judgment in that line of business is relied upon by the buyer. In such circumstances although the seller says nothing about his goods it is implied that the goods are reasonably fit for the particular purpose for which they are to be used. If they are not fit the seller thus breaks his contract and will be liable for any resulting damage.

Now the veterinary surgeon had obtained the toxoid from a well-known firm of manufacturing wholesale chemists who sold toxoids and other veterinary materials in the normal course of their business. If the damage had been caused by the toxoid they looked to the chemists to indemnify them, relying upon this well-recognized commercial term—the warranty of reasonable fitness in a sale of goods. On this basis the chemists were brought into the action as Third Parties, and the chemists, in their turn looking to the makers for their indemnity, brought in the laboratory which prepared the toxoid and sold it to them as Fourth Parties.

Unneutralized Toxins in a Toxoid

The facts which emerged during the trial, and a considerable volume of expert evidence given by specialists in bacterial chemistry and veterinary matters, led to much argument as to the real cause of the trouble. For while apparently all 60 cows and heifers inoculated with the new supply of toxoid, and no others, became sick, it was strongly averred that the same batch of toxoid when prepared three months previously had been tried out on two guinea-pigs and two white mice without ill-effects, and had also been used without harmful results on three other herds of cattle not more than ten days after the inoculations which were the subject of the action. One possibility, which would have relieved the veterinary surgeons and the Third and Fourth Parties of all liability, was that the cause was some peculiarity or idiosyncrasy in the cattle. There is always a remote risk that an animal may be " allergic " to a toxoid so that the proteins in the toxoid might produce anaphylaxis especially if the animal has already been sensitized by other inoculations or by its previous diet. The symptoms shown by the affected cattle were similar to what might be expected had this, a " protein-shock," been the true explanation. But there was no avoiding the fact which it left unexplained ; that every one of the 60 cattle inoculated with the particular batch of toxoid, and no others, fell sick. It was highly improbable and totally inexplicable that each of these particular 60 animals was allergic to the proteins in the toxoid. As to the toxoid there were two other possibilities: that it contained when used either (1) live bacilli, or (2) unneutralized toxins. Tests made after the inoculations showed the presence of neither, and, as already mentioned, within ten days three other groups of cattle—admittedly small—thrived on the same batch of toxoid.

The learned Judge decided on these facts that the cause of all the trouble was the presence in the toxoid when it was used on these herds, of unneutralized toxins. The cattle in fact went down with toxaemia ; they were poisoned by the toxoid preparation. Their after-behaviour was consistent with this explanation and the fact that subsequent tests of the toxoid—and its subsequent use on other cattle—showed it to be harmless could be explained by the presence in the toxoid of a continuing chemical action which while it eventually did neutralize all toxic contents had not done so at the time it was used on those cattle.

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however, enough should be used to take advantage of this increased efficiency. Milk production should have first priority on available food supplies.

2. Skimmed milk remaining after butter production should be recovered for human use and not wasted or merely returned indirectly by feeding to fowls and pigs, a much less efficient method. There is no known nutritional disadvantage in replacing butter by margarine fortified with vitamin A.

3. Nutritionally, egg production ranks next to milk production, but since fowls compete with man for the available grain supplies and vitamin supplements this factor must tend to place it lower in priority. Food available for poultry should be used for egg production rather than for dressed birds.

4. Beef cattle and sheep should be encouraged in so far as they can use range or other roughage but not if they require large amounts of concentrates, and they should in any case be slaughtered at the lighter carcass weights, since lighter carcasses contain a lower proportion of fat, which possesses energy value only. There is no justification in times of world food scarcity for producing carcasses to serve as sources of fat, for vegetable fats can be produced more economically.

E. G. W.

The Law as it Now Is

His Lordship found that the veterinary surgeon had given no express warranty to the farmers about the toxoid. All he had done was give his advice and opinion as a professional man. But in the circumstances, as a matter of law, there was an implied warranty that the toxoid was reasonably fit for inoculating cattle. This arose because the veterinary surgeon had provided the toxoid he used, and his Lordship could see no reason why he should be in any better position than a merchant because as well as selling the toxoid he also injected it. The contract as between the farmers and the veterinary surgeon was a contract to do certain work and provide the necessary materials (the toxoid) and in these circumstances the law does imply a warranty that the materials provided and used will be reasonably fit for their purpose, a warranty which is analogous to that which would be implied under the Sale of Goods Act, 1893, Section 14 (1) in a contract simply to sell the same materials. There was no suggestion that the veterinary surgeon should have found out before using the toxoid whether it was good or not, nor that he had obtained it from a doubtful source or been in any way lacking in competence, skill or judgment as a professional man. In the circumstances the law says he contracts that the toxoid shall be fit, and so if it is not he is liable for any resulting damage. Both the chemists and the makers were, however, also liable on the similar warranty implied in a Sale of Goods, so the veterinary surgeons were in this case indemnified, and the makers carried the whole burden of damages and costs.

Implications of the Case

Justice was without question done by this decision, and for that reason its possible implications, particularly to the veterinary surgeons (and many other professional men, such as doctors, surgeons and dentists), are not immediately apparent. The first point to note is that the veterinary surgeon can be sued thus on his contract when he provides and uses defective materials. This is so even though the defect is latent and undiscoverable by him before it is too late, and even when he is supplied only from the most reputable and reliable sources. The most conscientious, diligent and consummate skill on his part cannot avert all risk of catastrophe, and if he is sued on the contract all that the plaintiff needs to prove to win is that the damage he has suffered was caused by the defective material. It is purely a question of causation, which in practice can frequently be reduced to one of eliminating other possible causes or drawing reasonable inferences from the facts. It is a very different and much simpler task for the plaintiff than the one he sets himself when he has to prove negligence by a professional man in his skilled work.

The second point is that the veterinary surgeon is sued *in the first instance*, and it is he who is ordered to pay the damages to the plaintiff. He may succeed in obtaining an indemnity elsewhere and may for that purpose introduce another party in any way at fault. But these indemnities may be illusory or worthless. Under the weight of a judgment order for £10,000 damages and costs even reputable and well-established suppliers, if themselves not effectively indemnified or otherwise covered, might prove insolvent.

Possibility of Limiting or Meeting Legal Liability

What then can the veterinary surgeon do to protect himself from a possibly crippling lawsuit? There are three possibilities: (1) He might refuse to take any risks by leaving it to his client to obtain all the materials which will be required. Then if the materials are defective (but not obviously so to the veterinary surgeon when he used them) the client may be able to sue the suppliers, but not the veterinary surgeon. But even this immunity is not free from doubt and in any event it would normally be a quite impracticable procedure.

(2) He can continue to provide (and charge for) materials used upon the animals treated but expressly declare that he gives no undertaking in respect of those materials other than that he will select and use them with care and obtain them from a proper source. On the analogy of cases decided concerning Sale of Goods it may be insufficient merely to exclude any express or implied conditions or warranties. He may not be safe even if he merely agrees to use a specific material (a patent product) which his client asks him to use if the client is at the same time relying upon his judgment and is really only prepared to see that material used if the veterinary surgeon agrees that it is suitable. The exclusion of all warranties will not cover the case when the materials are so defective that they are in fact quite different from those he has contracted to use, though the fact is not discoverable in time. Thus, in Dodd's case it could have been said that the contract was to inject the toxoid, but toxic material was injected; no exclusion of implied warranties will meet the case as something quite other than the work contracted is performed. The veterinary surgeon should therefore contract on the basis, communicated to and understood by the client, that he *the surgeon shall not be liable for latent defects in his materials which are undiscoverable by the reasonable and normal exercise of his professional skill and judgment*.

(3) He can insure himself against *all* risks of legal liability arising from his professional work. Risks such as here discussed though entailing liability for potentially enormous sums are in fact not usual and the premium should not be heavy. In the light of Dodd's case it would appear to be only a matter of common prudence to take out such a policy.

QUESTIONS IN PARLIAMENT

Foot-and-Mouth Disease, Windsor

Mr. House asked the Minister of Agriculture how long it is anticipated that Windsor Great Park and forest will be closed owing to foot-and-mouth disease; and how many cattle have been slaughtered in the general area under the order.

Mr. T. Williams: Windsor Forest has not been closed, and the greater part of the Park including Virginia Water and the main public road is open to the public. That part of the Park which is farmed has been closed in order to minimize the risk of infection from foot-and-mouth disease. It will be re-opened as soon as restrictions in the infected area have been lifted. As regards the second part of the Question, 131 cattle and 1,125 pigs have been slaughtered in the infected area.

Mr. House: Is the Minister aware that there is considerable evidence indicating that disease in cattle is largely attributable to the use of chemical fertilizers, and will he use his influence to condemn the use of chemical and artificial fertilizers?

Mr. Williams: I am afraid this is the first time I have heard of that.

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L.C.C. (Attested Cattle)

Mr. Sargood asked the Minister of Agriculture the approximate number of attested cattle in each of the following counties: Essex, Kent, Middlesex, Surrey and Hertford; and how many of these are owned by the L.C.C.

Mr. T. Williams: The following are the figures:—

	Approximate number of Attested Cattle.	Number owned by the London County Council.
Essex ...	12,950	230
Kent ...	9,150	125
Middlesex ...	450	206
Surrey ...	8,100	1,235
Hertford ...	8,250	64

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Weekly Periodicals (Suspension)

Sir E. Graham-Little asked the Minister of Fuel and Power under what regulation and with what legal sanction the publication of some 500 periodicals was recently forbidden; and what consultation took place with the Ministry of Health before the suspension of medical journals; and what was the estimated and the actual saving of fuel achieved.

Mr. Shinwell: The suspension of publication of weekly newspapers was not the subject of any statutory order. It was secured by an instruction issued after consultation with bodies representing major interests in the newspaper and periodical Press. In the circumstances it was not possible to give exceptional treatment to any kind of periodical and there was therefore no ground for consultation with the Ministry of Health regarding medical journals. No estimate of the saving of fuel achieved can be given.

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Rabbit Trapping

Mr. Peter Freeman asked the Minister of Agriculture under what conditions are all other methods of taking or killing rabbits, except that of trapping by steel traps, considered to be inapplicable.

Mr. T. Williams: I assume that my hon. Friend refers to the setting of steel traps in the open, that is, outside the burrows. I am advised that this is regarded as the only effective method of destroying rabbits in, for example, dense shrubland or woodland areas, thick over-grown hedges, or areas adjacent to cliffs, where the burrows are mainly in the cliff face.

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African Colonies: Inter-Territorial Scheme

Mr. T. Reid asked the Secretary of State for the Colonies whether he will make a statement on the proposals for inter-territorial organization in East Africa.

Mr. Creech Jones: Yes, Sir. My hon. Friend will be aware that proposals for an improved scheme of inter-territorial co-ordination in East Africa were issued as a basis for public discussion at the end of 1945 in a non-Parliamentary paper, Colonial No. 191. Wide consultations subsequently took place in the East African Territories and I was fortunate enough, during my visit to East Africa last year, to have the opportunity of discussing the proposals with members of all communities in each of the Territories. Recently the Governors of the three Territories have, on my instructions, held consultations with the unofficial members of the Legislative Councils, and, following these consultations, modified proposals are to-day being issued as a basis for further public discussion and debate in the Legislative Councils of Kenya, Uganda and Tanganyika. The modified proposals, which should be regarded as replacing the proposals for reorganization contained in paragraphs 12-37 of Colonial 191, are contained in a paper of which copies are being placed in the Library of the House. I hope that, following the debates in the Legislative Councils, it will be possible to take steps to bring the new inter-territorial scheme into effect, in order to meet the pressing need for establishing a constitutional framework for the efficient administration of the inter-territorial services and for associating representatives of the public with the work of these services.

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Development Officers, Nigeria

Mr. Cooper asked the Secretary of State for the Colonies on what qualifications and recommendations appointments are being made by his Department of the development officers now being sent out to Nigeria.

Mr. Creech Jones: The essential qualification for development officers in Nigeria is that they should be the type of men capable of obtaining the co-operation of Africans in the large schemes now being undertaken. In addition, for some of the posts, previous agricultural or veterinary experience is required. Candidates are selected, as for other appointments in the Colonial Service, by competitive selection based on record and personal interview.

Mr. Cooper: How can my right hon. Friend account for the fact that out of the first ten development officers who went out to Nigeria four were returned home as unsuitable, and that the same thing applies to some 50 per cent. of those who have gone out since?

Mr. Creech Jones: I certainly do not accept the statement of my hon. Friend but I shall be glad to have any information on the subject which he possesses.

Mr. Hector Hughes: Can my right hon. Friend say how many of these development officers are to be appointed in Nigeria and when they are to be appointed?

Mr. Creech Jones: I cannot say without notice.

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Cancer Research (Vivisection)

Mr. Peter Freeman asked the Secretary of State for the Home Department the number of experiments on living animals that have been conducted for the purpose of cancer research in each of the years from 1939 to 1946; and what were the animals concerned, distinguishing between experiments with and without anaesthetics.

Mr. Ede: Statistics for 1946 are not yet available: the other figures for which my hon. Friend asks are as follow:—

Year	*With anaesthetics*	*Without anaesthetics*
1939	398	26,538
1940	781	10,949
1941	1,317	14,131
1942	3,138	11,162
1943	1,417	14,257
1944	1,020	20,551
1945	140	11,290

I am unable to classify these figures as between the animals used, but the great majority of the experiments—whether with or without anaesthetics—were performed upon mice.

Weekly Wisdom

Augustus was sensible that mankind is governed by names; nor was he deceived in his expectation that the senate and people would submit to slavery, provided they were respectfully assured that they still enjoyed their ancient freedom—Gibbon (1776). ["The Outlook for Physiology," C. Lovatt Evans, *The Lancet*, January 18th, 1947, **1**, No. 3, pp. 89-93.]

NOTES AND NEWS

Diary of Events

The special attention of Members of Council and Committees, N.V.M.A., is drawn to the dates of the March meetings, altered as notified in our last issue, and which are as follows:—

March 24th. 2.0 p.m. General Purposes and Finance Committee.
March 25th. 10.0 a.m. Veterinary State Medicine Committee.
2.0 p.m. Organizing Committee.
3.45 p.m. Home Appointments Committee.
(*Running concurrently*: 2.30 p.m. Technical Development Committee.)
March 26th. 10.30 a.m. **Council Meeting.**

Committees will be held at Gordon Square and the Council at the Connaught Rooms.

Mar. 15th.—Annual General Meeting of the Biochemical Society, at Guy's Hospital Medical School, 2.30 p.m.

Mar. 19th.—Meeting of the Section of Comparative Medicine, Royal Society of Medicine, 1, Wimpole Street, W.1, 5 p.m.

Mar. 20th.—63rd Annual General Meeting of the Western Counties Division, N.V.M.A., at Exeter (Osborn House, Queen Street), 2 pm.

Mar. 21st.—Annual General Meeting of the South Wales Division, N.V.M.A., at Carmarthen (Dolwar Café), 3 p.m.

Mar. 21st.—Annual General Meeting of the North of England Division, N.V.M.A., at Newcastle-upon-Tyne (King's College), 2 p.m.

Mar. 21st.—Meeting of the North of Ireland Division, N.V.M.A., at Stormont, 2.45 p.m.

May 23rd.—R.V.C. Students' Union Society Annual Ball, Grosvenor House, Park Lane, W., 8 p.m. to 1 a.m.

Mar. 28th.—Proposed Meeting of the Sussex Division, N.V.M.A., at Brighton (Old Ship Hotel), 2.30 p.m.

Mar. 28th.—Meeting of the Lincolnshire and District Division, N.V.M.A., at Grantham (George Hotel), 2.15 p.m.

Apr. 16th.—Meeting of the Scottish Branch, N.V.M.A., at Stirling (Golden Lion Hotel), 2.30 p.m.

R.C.V.S. Council Meetings

A meeting of the Council of the Royal College of Veterinary Surgeons for registration purposes, Thursday and Friday, March 27th and 28th, 1947.

Quarterly Meetings of Council of the R.C.V.S., Wednesday, Thursday and Friday, April 9th, 10th and 11th, 1947.

July 28th—Aug. 1st.—N.V.M.A. Annual Congress in Edinburgh.

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Brigadier Plunkett Succeeds Brigadier Kelly as Director, Army Veterinary and Remount Services

The appointment is announced of Brigadier J. J. Plunkett, C.B.E., M.R.C.V.S., as Director, Army Veterinary and Remount Services. Brigadier Plunkett succeeds Brigadier G. A. Kelly, C.B., M.R.C.V.S., who relinquishes his appointment, on the expiration of his tenure, with effect from March 1st.

Further reference will be made in an early issue.

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New Appointments to the Staff of the Ministry of Agriculture

As notified in recent issues, Council, N.V.M.A., has decided that no advertisements for appointments to the veterinary staff of the Animal Health Division of the Ministry of Agriculture shall be accepted for *The Veterinary Record* pending the settlement, in a manner satisfactory to the Association, of the question of the status and salaries of the Veterinary Officers of the Division.

In the meantime, any members of the profession who may, nevertheless, contemplate applying for such posts, should these be advertised elsewhere, are requested first to communicate with the General Secretary of the Association at 36, Gordon Square, London, W.C.1.

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PERSONAL

We have received through Dr. N. Plum, President of the Association of Danish Veterinary Surgeons, and who is an Honorary Member of the N.V.M.A., a request to intimate to our readers that a Danish practitioner and his wife in Karise—a beautiful district about 50 miles from Copenhagen—would appreciate the opportunity of effecting an "exchange visit" with an English veterinarian and his wife. The first eight days or so would be spent at the home of the practitioner and a further eight days "on tour." Those interested are asked to communicate with the General Secretary, N.V.M.A., at 36, Gordon Square, W.C.1.

Births.—Fitzpatrick.—To Mrs. Fitzpatrick (*née* Ruth Holmes), wife of R. J. Fitzpatrick, M.R.C.V.S., a son—Nicholas David.

Hobbs.—At the Haven Nursing Home, Luton, Beds., on February 24th, 1947, to Dorothy, wife of Peter Hobbs, M.R.C.V.S., of 13, Brandreth Avenue, Dunstable, a daughter—Helen Margaret.

Sugden.—On February 10th, 1947, at the Chesterfield Nursing Home, Clifton, Bristol, to Betty Sylvia Sugden, M.R.C.V.S. (*née* Wills), wife of Dick Sugden, a son—Richard John.

Thomas.—On January 7th, 1947, to Elizabeth Ray (*née* Phillips), wife of T. Idwal Thomas, M.R.C.V.S., Rhondda Rise, Gelli, Pentre, Glam., a daughter—Rhian Elizabeth.

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R.C.V.S. OBITUARY

Moore, Robert, late Veterinary Surgeon to the Ocean & United National Collieries, Ltd., 6, Glyncoli Road, Treorchy, Glam. Graduated Glasgow May 22nd, 1893. Died February 22nd, 1947.

Clarkson, Joseph, Broom Ryde, Ravenscar, Scarborough (late of Garforth). Graduated N. Edinburgh April 14th, 1887. Died March 3rd, 1947; aged 86 years.

Death of Mr. Joseph Clarkson

In the passing, at the great age of 86 years, of Mr. Joseph Clarkson, M.R.C.V.S., which we record above with the deepest regret, the profession mourns the loss of one of its most deeply venerated members. A man of the highest integrity, he achieved a great reputation as a practitioner at Garforth, and having a deep concern for the advancement of his profession, he brought his outstanding gifts to its service in many other ways. Mr. Clarkson was for many years one of the mainstays of the Yorkshire Division, N.V.M.A., while his worth as a member of Council, R.C.V.S., was accorded highest recognition by his colleagues in his election as President of the Royal College in 1925-26. Fuller reference to Mr. Clarkson's life and work will be made in an early issue.

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CONTROL OF SALE OF PENICILLIN

On Thursday of last week there was published the text of the Penicillin Bill, which was introduced in the House of Lords on the previous day by the Postmaster-General. The aim of the Bill is to control the sale and supply of penicillin and such other anti-microbial organic substances produced by living organisms as may be prescribed by regulation.

The Bill seeks to make it an offence to sell or supply penicillin or the other substances to the public without the prescription of a doctor, dentist, or veterinary surgeon. Offenders may be fined £100, and on a second or subsequent conviction may be liable to three months' imprisonment or a fine of £100, or both.

The purpose of the Bill is to safeguard the public against risk, since the Government are advised that free access to penicillin, which is no longer in short supply, would involve danger to public health. The main risk is said to lie in indiscriminate or inadequate doses, which might have the effect of making people penicillin-resistant. There also is a danger that penicillin might be used for unskilled self-treatment of venereal diseases, against which it can be effective if properly used.

It is possible that among the other substances to be controlled will be streptomycin, which is at present undergoing clinical tests.

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FOWL PEST

The Ministry of Agriculture and Fisheries announces that, after a period of 13 years' freedom from the disease in Great Britain, two outbreaks of fowl pest have been discovered among poultry kept on premises in Upper Weston, near Bath, Somerset. The mortality in these two outbreaks has been less than that experienced in this country formerly and therefore it is necessary, at the present time, for poultry-keepers to be especially watchful for any sign of the disease.

In the two cases already confirmed the observable symptoms were accelerated respiration accompanied by a peculiar rattle in the throat, yellowish diarrhoea, crop distention, twitching of the head and neck and partial paralysis of the wings. Egg production ceased. A further symptom which may sometimes be observed, though it has not been seen in these cases, is a discharge of mucus from the mouth and nostrils.

Poultry-keepers should bear in mind that recovered birds are likely to be "carriers" of the disease and that they may not resume laying for some months.

Veterinary surgeons and owners of poultry who may observe any of the above symptoms should report the facts immediately and despatch the carcase of a diseased or suspected bird to the Director, Laboratory of the Ministry of Agriculture and Fisheries, New Haw, Weybridge, Surrey.

FORMATION OF BRITISH LEGION BRANCH AT GLASGOW VETERINARY COLLEGE

At a meeting of ex-Service students held in the College in January, 1947, it was resolved to form a branch of the British Legion.

Permission was granted by the Council of the R.C.V.S. for the use of the word veterinary in the title, and so the branch has been named the Glasgow Veterinary Branch.

The membership at present is over 60, which is over 90 per cent. of the ex-Service students. Membership is open to all ex-Service members of the profession, as well as students, and it is hoped that ex-Service members, particularly Glasgow graduates, will join this branch in preference to any other.

The subscription is 4s. per annum with an entrance fee of 1s. Forms for membership may be obtained from the Secretary, Mr. H. M. Payne, at the College. Briefly the objects of the branch are to maintain the comradeship of the Services, and to assist members with any difficulties of resettlement in civilian life.

The inaugural meeting was held on March 6th, 1947. There was a good attendance and an enjoyable evening was spent. In addition to the meeting there was a meal and a "smoker" to conclude the evening. The Guest of Honour was the Chairman of the West of Scotland Area Council of the British Legion.

The branch is running a dance at the College on Friday, March 21st.

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FARMING POLICY: EMPHASIS ON LIVESTOCK

In the House of Commons on Thursday of last week, in reply to Captain Crookshank, Mr. Tom Williams, Minister of Agriculture, referred briefly to a statement he had issued that day based on the third annual review of the economic position of agriculture which had taken place between the Government and the various farmers' unions. The fact that final agreement had been reached, said Mr. Williams, when the statement was made available at a Press conference later, augured well for the future system of annual reviews which were to be made permanent in the Agriculture Bill.

The statement referred to the "Economic Survey for 1947," which (as recorded in our issue of last week) stated that the Government's policy in broad terms, both to save foreign exchange and for good farming, was to switch production as rapidly as the cereals position permitted from the production of crops for direct human consumption to the production of livestock and livestock products, especially pigs and poultry.

In the three succeeding years some further reduction in the target acreages of crops for direct human consumption should be possible, and although a substantial increase in imports of cereal feeding-stuffs might be expected from 1948 onwards, it would remain essential to plan for a higher standard of self-sufficiency than was the practice before the war, and therefore to maintain a comparatively high level of production of fodder crops, including oats and barley.

While the expansion of livestock production was expected to be accompanied by an increased area of temporary leys, the need for the highest level of self-sufficiency in feeding-stuffs pointed to a substantially larger tillage acreage than before the war.

The general objective would be to increase the output of livestock products to the maximum extent consistent with supplies of feeding-stuffs and breeding capacity. Milk producers were urged to aim at a continued expansion of not less than 50,000,000 gallons a year. From 1948-49 there should be a marked increase in the output of eggs and pig meat; revival of beef and mutton production must necessarily be somewhat slower. "Breeders of all classes of livestock are therefore urged to make their plans in the light of the urgent need for increased supplies of livestock products of all kinds. The prices that have now been fixed for livestock products for the forthcoming twelve months reflect the intention of the Government to provide every incentive to maximum output."

Replying to supplementary questions Mr. Williams said that in the course of the war quantity of livestock was the primary consideration. He hoped the time was not far distant when they would be able to concentrate on quality.

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POULTRY (STOCK IMPROVEMENT) ADVISORY COMMITTEE

A meeting of the Poultry (Stock Improvement) Advisory Committee was held on Tuesday, January 21st, 1947. Since the previous meeting there have been several meetings of the various Sub-committees by whom the detailed work of the main Committee is carried out.

Last year suggestions for the extension and improvement of the Accredited Poultry Breeding Stations Scheme and the Accredited Hatcheries Scheme were put forward by the Sub-committee concerned and endorsed by the Committee. These suggestions were submitted to the Ministry but owing to the reduction in poultry

rations resulting from the world shortage of feeding-stuffs it was not possible to consider any extension of accreditation. In the meantime suggestions for the extension and improvement of the Schemes were submitted to the Ministry by the Accredited Poultry Breeders Federation and the Poultry Advisory Sub-committee of the Lancashire W.A.E.C. Various suggestions in regard to the Accredited Schemes were also put forward by Poultry Advisory Sub-committees in other counties.

Moreover, an official Poultry Mission was sent last autumn to North America by the Minister of Agriculture and Fisheries and the Secretary of State for Scotland and their terms of reference included a specific instruction to investigate stock poultry breeding methods and stock improvement schemes in Canada and the U.S.A. An interim report on these matters was submitted to the meeting of the Committee on January 21st. The Committee also received a report from the Sub-committee concerned with poultry breeding methods in this country.

A small Sub-committee has been appointed from amongst the members of the Committee to consider these various matters and to put forward at an early date recommendations for the improvement and extension of the Accredited Schemes in the light of the suggestions made.

The Committee also considered a report on the progress in accreditation and satisfaction was expressed on the increase in the number of breeders in the Accredited Poultry Breeding Stations Scheme who now number 3,357. It was also noted that some progress had been made in the Ministry's efforts to introduce a greater measure of uniformity in the standard of accredited breeding farms throughout the country.

The Appeal Panel set up by the Ministry on the recommendation of the Committee has dealt with seven appeals from decisions made by the Provincial Poultry Advisory Officers involving the removal of a breeder from the Scheme or a reduction from full accreditation to probationer status. The Minister accepted the recommendations made by the Panel in every case; in four the Provincial Poultry Advisory Officers' decision was upheld and the appeal was successful in the remaining three.

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VETERINARY EDUCATIONAL TRUST

Spratts' Patent, Ltd., have informed Dr. W. R. Wooldridge, Scientific Director of the Veterinary Educational Trust, that they have agreed to make a first donation of £1,000 to the funds of the Trust, which is shortly to establish a Canine Research Station, with the promise of further support as the scheme progresses.

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The Veterinary Educational Trust announces the receipt of £1,002 13s. from the sale of racecards at the Newmarket Cesarewitch meeting; £100 from Messrs. N. M. Rothschild & Sons, and £25 from Bridgnorth National Farmers' Union Branch.

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Mr. J. E. Ferguson, owner of Airborne, the Derby winner of 1946, has given 200 gns. as a first contribution to the library which is being formed at the Veterinary Educational Trust's equine research station, now established at Lanwades Park, Newmarket. Mr. Ferguson has expressed the hope that future Derby winning owners will similarly help the equine library to become the finest of its sort in matters referring to the horse.

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ADDRESSES OF DISEASE-INFECTED PREMISES

The list given below indicates, first, the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

Foot-and-Mouth Disease:

Essex.—Rolleston Farm, Writtle, Chelmsford, Essex; Corporation Farm, Purleigh, Essex (Mar. 4th); Marsh Farm, East Tilbury, Essex (Mar. 5th); Flanders Wick Farm, Purleigh, Essex (Mar. 5th); Old Barns Farm, Margaretting, Ingatestone, Essex (Mar. 7th); Dairy Farm, Ingrave, Brentwood, Essex (Mar. 7th).

Staffs.—Bull House Farm, Yarnfield, Stone, Staffs. (Mar. 3rd).

Surrey.—"Woodaval," Cox Lane, West Ewell, Epsom, Surrey (Mar. 8th).

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Mr. J. M. Roger, Ringwood, has given a 16-months-old Guernsey bull calf, President's Bloom of Rolleston, to the Trust, on whose behalf it will be auctioned at the English Guernsey Cattle Society's Sale at Reading on March 5th. The bull is a son of Hadham Avril's President and Rolleston Blossom, a cow which gave 10,060 lb. of milk (4·95 per cent. butter-fat) with its first calf.

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the N.V.M.A.

Correspondents should write as briefly as possible and letters should not exceed 350 words.

DODD *v.* WILSON & McWILLIAM & OTHERS

Sir,—In your issue of February 1st, 1946, you reported the Judgment in the case of Dodd *v.* Wilson & McWilliam & Others.

As the case has caused considerable interest in professional circles we feel we ought, in your readers' interests, to explain more fully the consequences to the profession following the Judgment than is apparent by simply reading a Press report of the Proceedings. We trust we shall not be encroaching too much on your valuable space.

Messrs. Wilson & McWilliam, being members of the National Veterinary Benevolent & Mutual Defence Society, immediately reported the occurrence of the incident and the possibility of a claim being made against them. From that time the Council gave much time and thought to the preparation of the defence and on Messrs. Wilson & McWilliam being informed definitely that a claim was to be made against them, instructed one of the most reputable firms of solicitors to defend the case, the satisfactory result of which you reported in your issue of November 9th, 1946.

Whilst Wilson & McWilliam were given judgment in the Third Party Proceedings against Willington Medicals Ltd. for the full amount which they were called upon to pay to the Plaintiffs by way of damages and costs, and in addition they recovered their own costs of defending the action and of the Third Party Proceedings, the Society may have to find a considerable sum of money by way of legal and other expenses incurred over and above the taxed costs as allowed by the Court. This will be a great drain on the funds of the Defence Branch of the Society.

In order that your readers may fully realize the present position we cannot do better than quote a few extracts from a letter received from our solicitors following the conclusion of the case:—

"The two points which were taken by Willington Medicals Ltd., in the defence of the action, were that the cattle were allergic to the toxoid which had been carefully and properly prepared and was perfectly harmless to normal cattle."

"The other point taken was that a professional man, *e.g.*, a doctor or a veterinary surgeon, is in a different position from a seller of goods in that the duty of a professional man is confined to exercising reasonable care in the discharge of his professional duties and to exercising reasonable care in the selection of any drugs or medicines which are supplied as part of the treatment. The seller of drugs on a plain contract such as existed between Willington Medicals Ltd. and Wilson & McWilliam warrants that the goods he sells are of merchantable quality and fit to be used for the particular purpose for which they are supplied."

"The Judge has held in this case, and we think rightly, that the professional man is under the same duty and liability as the seller of goods because if he had merely supplied, in this case the toxoid, and left it to the farmer to administer himself to his cattle, that would have been a plain contract for sale with the attendant warranty. It cannot logically be said that because the professional man himself administers the drug or medicine his liability is any less, because that line of argument involves saying that where a professional man does more his liability is less."

"The argument was taken because the Plaintiffs had only sued Wilson & McWilliam, leaving it to us to bring in Willington Medicals Ltd. and for them to bring in Phylax Serum Laboratories Ltd. whose existence as the manufacturers was not disclosed by Willington Medicals Ltd. until a very late stage."

"It was made clear by everyone throughout the case, and by the Judge, that no criticism of any sort or kind was made or could be made against Wilson & McWilliam."

In this case the suppliers, Willington Medicals Ltd. are, as one would expect with a firm of their standing, satisfying the judgment and are entitled to be reimbursed by their manufacturers.

Arising out of this case, which may have serious repercussions and others which have recently been brought to our notice, the Council of the Society is actively engaged in trying to evolve a scheme whereby it will be possible to offer our members much greater benefits than have hitherto been possible.

We are,

Yours faithfully,

John Holroyd, *President.*

F. Hopkin, *Hon. Treasurer and Treasurer.*

National Veterinary Benevolent & Mutual Defence Society,
35, Manchester Road, Knutsford.
February 19th, 1947.